1990

A procedure to measure the effects of covert death anxiety on the physiological and affective responses of student nurses

John Luther Weeks
College of William & Mary - School of Education

Order Number 9022045

A procedure to measure the effects of covert death anxiety on the physiological and affective responses of student nurses

Weeks, John Luther, Ed.D.

The College of William and Mary, 1990

U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106

A PROCEDURE TO MEASURE THE EFFECTS OF COVERT DEATH ANXIETY ON THE PHYSIOLOGICAL AND AFFECTIVE RESPONSES OF STUDENT NURSES

A Dissertation

Presented to

The Faculty of the School of Education

The College of william and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

---

by

John L. Weeks

March, 1990

A PROCEDURE TO MEASURE THE EFFECTS OF COVERT DEATH ANXIETY ON THE PHYSIOLOGICAL AND AFFECTIVE RESPONSES OF STUDENT NURSES

---

by

John L Weeks

Approved March 1990 by

Fred L. Adair

Fred L. Adair, Ph.D.

C S Matthews

Charles O. Matthews, II, Ph.D.

Kevin E. Geoffroy

Kevin E. Geoffroy, Ed.D.

TABLE OF CONTENTS

TABLE OF CONTENTS

Acknowledgments

The completion of this dissertation was achieved only through the encouragement and support of facility members, friends, family, and other individuals. In particular I wish to acknowledge the contribution of my wife, Gwendolen, who made many personal sacrifices and was willing to assume more than her share of domestic and family responsibilities in order for me to have the time necessary to complete this dissertation.

Sincere thanks are extended to committee members, Dr. Kevin E. Geoffroy and Dr. Charles O. Matthews, II for their encouragement and constructive criticism; Dr. Thomas J. Ward for his technical assistance and guidance in the area of statistical analysis. Their contributions are greatly appreciated.

Finally, I deeply appreciate the support and encouragement of Chairman Dr. Fred L. Adair, who also served as my trusted advisor during the Doctoral Program. His contributions are many, but, perhaps, most important was his ability to stimulate my intellectual curiosity and challenge me to greater learning.

Abstract

A PROCEDURE TO MEASURE THE EFFECTS OF COVERT DEATH ANXIETY ON THE PHYSIOLOGICAL AND AFFECTIVE RESPONSES OF STUDENT NURSES

Weeks, John Luther, Ed.D. The College of William and Mary in Virginia, 1990. 120 pp
Chair: Professor Fred L. Adair

The purpose of this study was to develop and test a procedure to measure the effects of covert death anxiety on the physiological and affective responses of student nurses. The author also hoped to demonstrate the feasibility of the utilization of a personal computer as a tachistoscope for the purpose of presenting subliminal death stimuli; evaluate the use of heart rate change as a physiological measure and the State scale of the STAI as the affective measure of the momentary response to the death stimuli, with the Templer Death Anxiety Scale as the trait measure.

The subjects of the study were 44 student nurses enrolled in an associate degree program at J. Sargeant Reynolds Community College in Richmond, Virginia. The overall design of this study was a counterbalanced two-treatment random assignment contrast group experimental paradigm.

It was hypothesized that (1) there would be a significant difference at the .05 level between the response to death word stimuli presented subliminally versus supraliminally as measured by heart rate changes and the State Anxiety Scale; and (2) there would be a significant correlation at the .05 level between the Templer Death Anxiety Scale and the heart rate change for the presentation of death stimuli.

Although the results were not significant at the .05 level, there was a large difference in the means of the two treatment groups ($p > .07$) for heart rate change. The large difference in the means of the two groups suggest that a study utilizing more potent death stimuli such as personalized death imagery or personalized death picture symbols may produce significant results for the procedure employed in the present study.

A PROCEDURE TO MEASURE THE EFFECTS OF COVERT DEATH ANXIETY ON THE PHYSIOLOGICAL AND AFFECTIVE RESPONSES OF STUDENT NURSES

Chapter 1

The Problem

Need for the Study

For patients who are dying, often the most important comforters are the nurses caring for them. (Barton, Crowder, and Flexner, 1979). Enhancing the ability of nurses to be emotionally available to terminally ill patients is therefore an obvious concern. However, a major obstacle in evaluating different techniques of achieving such enhancement is the difficulty of measuring covert anxiety about death.

The goal of nursing according to Stuart and Sundeen (1983) is define as facilitating "the patient's positive adaptation as a unique individual to the stress he is experiencing" (p. 63). These authors state that "the principal helping tool the nurse can use in her practice is herself. Thus self-analysis becomes the first building block in being able to provide quality nursing care" (p. 63). Such self-analyses requires the nurse, as comforter, "to examine her own feelings and reactions as a person, as well as her actions as a professional provider of care" (pp. 63-64) in order to "be there" emotionally for the patient. It is particularly critical for the nurse to "be there" for terminally ill patients because, family and friends are struggling with their

own grief, and the nurse is often the only person who is emotionally available to the patient.

Yet, even with the nursing emphasis on the role of comforter, observational and behavioral studies of nurses interactions with and care of terminally ill patients suggest that nurses are not emotionally available to terminally ill patients in the same degree as they are for patients with more optimistic prognoses. For example, prior to the publication of Kubler-Ross' work, Kastenbaum (1967) found that over 80 percent of nurses verbal interactions with dying patients consisted of avoidance-type communications. In a later study, Liberman, Handal, Napoli, and Austrin (1983) noted that health-care personnel are awkward and uncomfortable with dying patients and hypothesized that this was due to general death anxiety on the part of the health care worker. Eakes (1985) found that the higher the level of death anxiety in nursing staff, the more negative are the attitudes they demonstrate toward nursing home residents. Benoliel (1988), in a later review of the literature, found that negative attitudes are obstacles to terminal care in the current system of health care. Consequently, a nurse's own death anxiety may have an impact on his or her ability to be emotionally available as the primary health care comforter for dying patients.

To understand how to prepare nurses to be primary health care comforters for dying patients, nursing educators need empirical studies of the effect of death anxiety on nurses and

also need ways to evaluate what therapeutic techniques for reducing death anxiety would be effective in the nursing education curricula.

Many of the current outcome studies, that attempt to evaluate the effectiveness of various techniques for reducing death anxiety levels in nurses, have relied on self-report instruments which conceptualize death anxiety as a unitary construct. The general literature, however, suggests that the construct "death anxiety" has a number of dimensions. These dimensions have been identified as fear of death of self, fear of dying of self, fear of death of others, and fear of dying of others by Collett and Lester (1969). Similarly, Choron (1964) defined death fears as consisting of fear of what comes after death, fear of the event or process of dying, and fear of ceasing to be. Durlak and Kass (1981) performed a factor analysis of fifteen death scales. Their results supported the concept of multidimensional death fears co-existing and covarying within individuals. Elements of death fears which relate to concerns about the process of dying and/or the effects one's death may have on the survivors, or what comes after death, are primarily correlates of conscious death fears rather than covert death anxiety. These fears are related to a fear of something rather than an existential fear of "no thing" (Kastenbaum & Aisenberg, 1972).

The literature generally categorizes death fears and related psychometric measures under one of two broad

categories depending on the level of cognitive awareness by the individual. The two categories are (1) overt, i.e., conscious, direct, verbal, and cognitive death anxiety; and (2) covert, i.e., unconscious, nonverbal, indirect, and affective death anxiety.

Yalom (1980) suggested that outcome instruments measuring death fears as a unitary construct lack the necessary validity for an assessment of both overt and covert death anxiety. Further, he suggested that the development of instruments for measuring covert death anxiety is essential for use in outcome studies evaluating the effectiveness of various therapeutic techniques to reduce death anxiety.

Littlefield and Fleming (1984) employed state and trait measures of death fears, in addition to covert and overt measures in a study of death anxiety in 84 college psychology undergraduates. They noted that while there was no observed change in trait anxiety , i.e., on the Templer Death Anxiety Scale (DAS), following presentation of death stimuli, there was an increase on state measures of death anxiety in the experimental subjects. This study suggests the need for state measures as well as overt and covert anxiety measures in outcome studies of the use of therapeutic techniques to reduce death anxiety.

Fortunately self-report instruments to measure cognitive/verbal or overt death fears have been developed and extensively tested. Of the available overt measures of death

fears, Pollak (1979) concludes in his review of the literature that the most popular "and likely the most adequate psychometric measures currently in use are the scales developed by Collett and Lester and Templer" (p. 99). The Templer DAS is considered highly reliable with test-retest correlations of .83, "and Templer has provided a considerable amount of validity data" (Handal, Peal, Napoli, and Austrin, 1984, p. 47).

On the other hand, the results of efforts to develop a valid and reliable measurement of covert death anxiety have been disappointing. In a review of empirical studies from 1966 until 1979 on correlates of death anxiety, Pollak (1979) reported mixed results for various measures of covert death anxiety. In a later study, Handal et al. (1984), noted that "research investigating conscious death anxiety has yielded better reliability and validity" (pp. 245-246) than research investigating covert death anxiety. Handal et al. then conducted a large study comprised of 172 subjects and used a multilevel, multimethod approach to investigate covert death anxiety. Again the questionable validity of the indirect measures of covert death anxiety weakened the study, with the authors concluding that "among the indirect measures of death anxiety not a single significant correlation was found" (p.258).

The need for valid and reliable measures of covert anxiety has been noted in the literature on death for many

years. White, Gilner, Handal, and Napaoli (1983) conducted a treatment outcome study with nursing students from Saint Louis University School of Nursing. This study attempted to evaluate the effectiveness of several behavioral interventions designed to reduce the death anxiety level of student nurses. The results of the study were equivocal due, in large part, to the lack of validity of the measures of covert death anxiety. In addition, evaluation of the results of this outcome study was further hampered by the lack of empirical research in the literature demonstrating "the nature of the relationship between self-report measures and measures of unconscious death anxiety" (p. 41). The study concluded that "no further outcome studies in this area could be realistically completed and evaluated without research directed at improving the dependent measures" (p. 41). "Affective and behavioral components of death anxiety must be evaluated as well [i.e., in addition to cognitive, verbal measures] in order to determine in the case of health care professionals if interventions alter behavior with patients" (p. 41). "There are no clearly validated affective measures at present, and development of such is crucial" (p.41). Handal et al., (1984) concluded in a later study that "clearly there is a need for systematic development and investigation of indirect measures of death anxiety focusing on the psychometric properties of reliability and validity" (p. 260).

Yalom's (1980) considers "conscious death anxiety...of limited relevance to an understanding of personality structure and psychopathology. The cornerstone of dynamic psychology is precisely that strong anxiety does not remain conscious: it is repressed and processed" (p. 51). Therefore the lack of instruments for measuring covert death anxiety which are able to meet the rigorous validity and reliability standards necessary for evaluating outcome studies has adversely impacted the study of death anxiety.

To be useful for nursing faculty any process for evaluating the outcome of techniques for reducing death anxiety will require pretest-posttest instruments that meet practical considerations: they must be readily available in the medical profession, economical, easy to use, and easy to interpret. In addition, these instruments must be able to meet rigorous psychometric standards for validity and reliability. The purpose of this study is to develop and evaluate, within these constraints, a multilevel, multimethod procedure for measuring covert death anxiety for utilization by nursing faculty in the education of nursing students.

Statement of the Problem

Yalom (1980) hypothesized that covert death anxiety had a greater impact than overt death anxiety on the affect and subsequent behavior of individuals. Handal and Rychlak (1971) found a curvilinear relationship between the Repression-Sensitization scale and the Templer DAS, a unidimensional

measure of death anxiety, suggesting that some subjects repress their death anxiety. When Kunzendort (1985) hypnotized subjects, he found that they manifested higher death anxiety levels than they did when they were not hypnotized. Handal (1980) found higher death levels associated with less effective problem solving. All of these studies suggest that covert death anxiety has a significant impact on the affect and behavior of humans.

To date, efforts to measure empirically the level of covert death anxiety have produced mixed results. The validity of these covert measures is questionable because they do not correlate consistently with each other. As for the reliability of the covert measures, the literature is, for the most part, silent. Conversely, empirical studies in the literature have found good reliability and validity for frequently cited measures of overt death anxiety.

As stated earlier, in addition to the lack of valid and reliable measures of covert death anxiety, death fears are generally considered in the literature to have multidimensional characteristics encompassing both covert and overt anxiety, with state and trait characteristics (Choron, 1964; Collett & Lester, 1969; Hoelter and Hoelter, 1980).

Although measures of overt death anxiety are reliable and valid they do not provide information about a major factor in death anxiety; i.e., covert death anxiety. In addition, the overt self-report measures of death anxiety in the literature,

such as the Templer DAS, are considered unidimensional trait measures which provide little information about short term effects of methods or techniques to reduce death anxiety levels in individuals.

Therefore we need comprehensive multidimensional measures of death anxiety that can provide information about overt, covert, state and trait dimensions of death anxiety in order to evaluate the outcome of therapy techniques designed to reduce death anxiety (Handal et al, 1984; White et al, 1983).

Purpose of the Study

The purpose of this study is to develop and test a procedure to measure empirically the effects of covert death anxiety on student nurses. Once developed, it could be employed by health professionals and nursing faculty to enhance their evaluation of various techniques and methods to reduce covert death anxiety in student nurses. The construct, "covert death anxiety", is inferred from the unexplained variance of overt death anxiety with repression and sensitization scales and other measures which tap below the conscious level. Consequently, a multilevel, multimethod procedure providing data on overt, covert, state, and trait characteristics of death anxiety is required in order to provide a comprehensive means to assess death anxiety in student nurses.

Research Questions

Consistent with the above considerations, the high validity and reliability of the Templer DAS self-report (15 items) trait measure together with the self-report (20 item) State Anxiety Scale of the Spielberger State Trait Anxiety inventory (STAI) appear to be the most appropriate instruments for state and trait measures of death anxiety. The literature on perceptual defense and repression suggests comparing the subjects physiological response to the presentation of death stimuli below their recognition level as one method, with face validity, of measuring covert death anxiety. In order to validate a procedure to measure covert death anxiety in student nurses with these instruments, an empirical answer to the following research questions would appear necessary.

1. Is there a significant difference between the physiological response of student nurses to death words or symbols presented below their recognition threshold and their physiological response to death words or symbols presented above their recognition threshold?

2. Is there a significant difference between self-report general anxiety test scores of student nurses responding to death words or symbols presented below their recognition threshold and their scores responding to death words or symbols presented above their recognition threshold?

3. Are self-report trait measures of death anxiety correlated with the level of physiological response in student nurses when they are presented with death words or symbols?

Theoretical Rationale

Yalom (1980) proposed a model of existential psychodynamics, which conceptualized existential concerns of the individual as the cause of pathological behavior. One of these existential concerns is the covert fear of death. This model is derived in part from a variation of Freud's psychodynamic model of mental functioning; i.e., the concept of conflicting forces existing within the individual at various levels of consciousness and unconsciousness resulting in both adaptive and maladaptive behavior, thoughts, and feelings.

Unlike the Freudian psychodynamic-based therapies which conceptualize internalized conflict of suppressed instinctual striving, Yalom (1980) hypothesized these conflicts as relating to the ultimate concerns of existence; death, freedom, isolation, and meaninglessness. Yalom's structure of existential psychodynamics retained the basic dynamic structure of Freud's model (drive---anxiety---defense mechanism). Yalom replaces the Freudian concept of energizing instinctual drives with the concept of covert death anxiety, emanating from the individual's subception of this ultimate concern, as the energizing factor. One of the major tenets of Yalom's approach relates to the influence of covert death anxiety on human emotions and the subsequent defense mechanisms. This study will test a procedure for assessing the effects of covert death anxiety on student nurses.

Chapter 2

Review of the Literature

Historical and Theoretical Development

The psychometric measures of covert death anxiety in the literature may be categorized as (1) projective measures and (2) measures based on perceptual defense and measured either with or in combination with self-report inventories, or physiological measured responses and reaction times. (Yalom, 1980).

The projective measures, which are not readily analyzed by empirical methods, are interesting but are not feasible for the purposes of this study, which seeks to develop an empirical scored process for measuring covert death anxiety. Hence, the review of the literature in this study will focus on the empirical measurement of death anxiety.

Death anxiety defense mechanisms. Handal and Rychlak (1971) conducted a study using the Repression Model of death anxiety to predict which subjects will report more unpleasant content and death dreams. These authors hypothesized that subjects scoring high and low on the Templer Death Anxiety Scale (DAS) would report more unpleasant content and death dreams than the subjects who scored in the middle range. The results "supported the hypothesis of a curvilinear

relationship between conscious admission of death anxiety and the reporting or recalling of unpleasant content and/or death dream content" (p. 15). In addition, this study provided evidence "to support the validity of the DAS both as a measure of death anxiety and as a possible measure of repression" (p. 15). Hayslip and Walling (1985), in a study of the impact of hospice volunteer training on death anxiety, found that unconscious death fears' becoming conscious was related to an increase in the Templer Death Anxiety Scale scores, suggesting a lessening of denial.

However, when the Byrne's Repression-Sensitization Scale (R-S) was used as a corollary to the DAS, the R-S scale failed to predict the same results. The researchers suggest that it is possible that there are different types of repressors, which may have confounded the S-R measure (Handal and Rychlak, 1971).

In a later study, Kunzendort (1985) reported that his study "indicated, when college students are hypnotized and instructed to rate their subconscious fears of death, they express greater fear of inexistence than when they are awake" (p 31).

Similarly, in a study of 90 female students, the majority being nursing students, Handal (1980) investigated his belief that "the most promising conceptual model to understand the influence of death anxiety on behavior appears to be the defense mechanism model which employs the concepts of denial

and repression" (p. 365). Accordingly, Handal (1980) designed a study to test the hypothesis,"that there are systematic predictable similarities and differences between high, moderate and low DAS participants" (p. 366). Handal's procedure required the participants first to complete the DAS. After the DAS was collected, the subjects completed the NASA Moon Problem Task along with Zuckerman's Affective Adjective Check List. Tentative group norms, based on a previous study with the DAS, were established as follows: (1) highly death anxious, 74 and above; (2) moderately death anxious, 64 through 69; (3) low death anxious, 61 and below. On the basis of their DAS scores the participants were then assigned to one of these three experimental groups.

Subsequently, the participants were then instructed to form three-person teams and to solve the NASA problem. The specific instructions were as follows: "You are to follow the instructions printed on your NASA forms but this time you are to solve the problem consensually, not individually" (Handal, 1980, p. 370). This study supported the hypothesis that systematic, predictable similarities and differences exist among high, moderate and low DAS participants in their ability to solve problems individually and in groups (Handal, 1980).

Intervention strategies or descriptive topics.

Previous research on measuring covert death anxiety with auditory presentation of death stimuli. Meissner (1958) noted

that psychiatrists and psychoanalysts attempting to "account for the anxiety reaction typical of neurosis in terms of a 'fear of death'...[they] have begun to recognize that at least some kinds of neurotic behavior can be described and treated in relation to this dread of death" (p. 295). Accordingly, Meissner designed a study to investigate the relationship between what he described as fear in the form of dread of the dissolution of one's personality, and the person's emotional response to that dread.

Meissner cited studies which suggested that the Galvanometer Skin Response (GSR) was an "appropriate index of internal, inhibited, unconscious emotionality" (p. 295) and accordingly designed his study to include the use of the GSR to measure affective response to death symbols. His hypothesis was that "the presentation of stimulus words, which have been found by psychoanalytic methods to be symbolic of the death concept, elicit unconscious emotional responses, which are indicated by a greater GSR amplitude to such words than to neutral terms" (p. 295). Accordingly, thirty control words were randomly selected from the Kent-Rosanoff Word List and randomly mixed with twenty death symbol words. An additional ten words from the Kent-Rosanoff Word List were drawn in order to provide a warm up period for the subjects prior to the administration of the test.

The subjects in the study consisted of 40 Roman Catholic seminarians with ages ranging from 23 to 45 years with a

median of 28 years. The seminarians were not provided with any information regarding the purpose or specific content of the experiment.

In order to test the validity of the interassociation of these words, a written pretest was administered to another group of twenty seminarians, comparable to the experimental subjects, prior to the administration of the test to the subjects of the study. The test procedure involved placing the galvanometer electrodes on the participants followed by instructions for them to lay supine on a bed and to relax for 15 minutes. The seminarians were then instructed to:

> (a) respond to the stimulus word with the first word that they happened to associate with it, (b) reflect quietly on the content of their response, (c) remain as relaxed and inert physically as possible, and (d) reflect only on the content of their response, excluding all other extraneous ideational material. (Meissner, 1958, P. 296).

Subsequently in an even, neutral tone of voice, the ten warm up words were presented and were followed immediately by the fifty randomly mixed death stimulus and neutral words.

The galvanometer was read at the time the word was presented and again at the point of maximal deflection. The experimenter allowed the resistance on the GSR to return to the first level prior to presenting the next word. The interval varied between participants and from word to word with an average interval of 20 seconds.

Immediately, following the experiment, the subjects were given a written test using the same twenty death symbol words presented in the order listed above. The following instructions were printed on the written test blank:

> This is a test of interassociation. Try to group as many of the words as possible under a common association or concept or common idea to which they refer. Then indicate the common idea, together with the number of the words from the list which you associate with it, in the spaces provided. Do this for each common association. The more common associations you can find and the more words you can relate to each association, the better it will be. (Meissner, 1958, p. 295).

The number of death symbol words each participant listed under an associated word was tabulated. Each referent was recorded as one response with a maximum of twenty referents possible for any one associated word. Then the total group scores were obtained for each referent by adding the individual scores. The experimenter accepted as evidence of association with the death concept only explicit references to the word death. Based on the study, Meissner concluded that the "results indicate that the presentation of the death symbol words elicited, at least, an unconscious affective reaction," [and] "that the emotional responses obtained on the GSR were actually related to the death concept" (p. 299).

The sample of the population studied by Meissner was limited to Roman Catholic seminarians with extensive training in religious values. Their training, common religious orientation, and greater involvement in death issues may have created a greater sensitivity to death symbols and thus biased the results of the study. Thus, generalization of the results to the general population is questionable.

A second difficulty with the study was the lack of control for the extent of extraneous ideational material which may have surfaced for the subjects and which may have influenced the affective response and thus the GSR measurements. In addition, no controls were instituted, such as a taped voice, to ensure that the tone of voice of the experimenter was delivered without bias between either the words or the subjects.

Templer (1971) also employed an auditory method of presenting death words with GSR-measured response in a study to determine the relationship between verbalized (overt) and nonverbalized (covert) death anxiety. He measured verbalized death anxiety with the Death Anxiety Scale (DAS) of Templer. The nonverbalized (covert) death anxiety was measured with the galvanic skin response to death-related words. These two measures were then related to the repression-sensitization dimension of personality with the use of the Repression-Sensitization Scale (R-S) of Byrne. The subjects of the study were 49 psychiatric patients who were administered the DAS and

the R-S scale prior to the experimental procedure. Subsequently, a GSR with electrodes was attached to the second and fourth finger of the left hand of subjects. The subjects were then given these instructions: "Shortly after I leave the room you will hear a number of words. Please listen carefully to these words" (p. 212). Thirty words consisting of 10 death-related words, 10 words high in other affective content, and 10 neutral words were presented at 30-second intervals.

The experimenter controlled for habituation and GSR base levels by random order selection of a word from each category grouped together in a set, with a total of ten sets. A response was defined as a "decrease in skin resistance of 300 ohms or greater with a latency from .5 to 5 seconds and in the case of multiple responses, the first was scored" (Templer, 1971, p. 212). The death-GSR score was the proportion of word sets for each subject in which the GSR response to the death word exceeded the neutral word. The death-GSR score was related to the DAS and the product moment correlation coefficient was .30 at the .05 significance level. Thus a modest correlation was found between the DAS and the death-GSR.

The R-S scale of Byrne was highly correlated with the DAS (.51; $p. < .01$) but correlated only .02 with the covert death anxiety measure (DGSR). The discrepancy between the DAS and the DSGR was correlated .38 ($p. < .01$) with the S-R. This correlation suggests that repression may be employed by some

of the subjects to defend against covert death anxiety. However, Templer, believed that a more accurate statement would be that the S-R is "independent" of covert death anxiety. Since the DAS correlates highly with the S-R, both high and low levels of death anxiety, as measured on the DAS, may indicate "pathology" and represent the different mechanisms of defense employed by "repressors" vs "sensitizers" to handle covert death anxiety. The studies in the literature indicate mixed results on this point (Littlefield & Fleming, 1984).

Previous research on measuring covert death anxiety with supraliminal presentation of death stimuli. Handel et al. (1984) utilized the Death Anxiety Sideshow Measure (DASM) for uncovering covert death anxiety. The DASM was based on research indicating increased physiological responsiveness when the participants are exposed to death words or stimuli. The method consisted of showing the participants a set of color slides consisting of eight death-word and death-picture slide pairs and a corresponding set of color slides of eight neutral-word and neutral-picture slide pairs. The heart rate of the subjects was continuously monitored via a finger pulse rate plethysmograph.

The study was conducted as follows:

> There was a two-minute rest period before the first slide series was presented (after the subject was hooked up to the plethysmograph). During the last 30 seconds of that

period, heart rates began to be recorded at 5-second intervals. Similarly, there was a 2-minute rest interval before the second series of slides was presented (immediately following the last slide of the first series of slide pairs). During these rest periods the participants were told just to relax while the plethysmograph was being adjusted. Again, heart rates began to be recorded during the last 30 seconds of this rest period at 5-second intervals. Each word slide was presented for 20 seconds, then immediately followed by a 20-second exposure to a picture slide that represented the word. The next word slide in the series immediately followed the picture slide and so on, until all sixteen slides in the series had been shown.

Heart rate responses were examined in three different ways. First, a Heart Rate Total (HRT) was calculated. This consisted of a participant's average heart rate during the entire period that his heart rate activity was recorded. Secondly, a Neutral Slide Heart Rate (NHR) and a Death Slide Heart Rate (DHR) were calculated. The NHR consisted of the participants' average heart rate response during the actual presentation of the sixteen neutral slides. The DHR consisted of the participants' average heart rate response during the presentation of the sixteen death-related slides. (Handal et al., pp. 249-250).

The DASM was not significantly correlated with the Templer DAS. Although the DASM did correlate significantly with a direct measure of death anxiety (the Revised Livingston and Zimet Death Anxiety Scale) it was low (Handal et al. (1984).

In a second study employing supraliminal presentation of death stimuli, Fleming (1977) investigated the relationship of death anxiety, as measured by Handal's death anxiety scale, a paper-and-pencil inventory, and visual recognition thresholds for subliminally presented death and neutral words. The subjects were 61 female volunteers enrolled in the first year of a two year diploma nursing program. It was hypothesized that "respondents who use a characteristic repressive avoidance defense in a perceptual recognition task, i.e., who have elevated thresholds for death as opposed to neutral stimuli, will have lower death anxiety scores than perceptually vigilant participants" (p. 392).

Fleming's method involved presenting a list of 17 selected death words with an equal number of neutral words based on the rating of a group similar to the participants in the study. The participants were given the Handal's death anxiety scale with responses scored on a 6-point scale with a potential score range of 20 to 120.

Subsequently, "five randomly selected death words and five neutral words were tachistoscopically presented at gradually increasing exposure durations until correct

recognition occurred" (Fleming, 1977, p. 394). The experimenter would verbally alert the participant when the words were initially tachistoscopically presented and simultaneous activate the timer. The subsequent classification of the respondents into perceptually defensive or perceptually vigilant groups depended on whether they had lower recognition thresholds for neutral as compared to death words.

Fleming's (1977) study failed to find a significant correlation between the perceptual defensiveness and death anxiety score, although Fleming noted that this was not consistent with previous research into response characteristics of repressers-sensitizers.

Golding, Atwood, and Goodman (1966), in an earlier similar study, used a tachistoscope to present neutral and death-related words and measured the number of trials required for identification of the two types of stimulus words. Their method utilized 30 male psychology students, who were unaware of the purpose of the study. A list of 40 words was rated by another group of 80 psychology students on a 7-point scale ranging from highly related to death (1) to highly related to life (7). Words rated higher than 5.5 were considered life-related, and words rated less than 2.5 were considered death-related. Those words in the intermediate range from 2.5 to 5.5 were considered neutral words. From this list, four words were drawn from the death-related group and four words from the neutral group. These eight words were matched for equal length

and approximately equal frequency of occurrence in written English. The words were then presented to each subject individually in a semidark and soundproof room. The order of presentation of each stimulus word was randomized; but no more than two words in the same category were presented in succession. The duration of the flash was held constant to .01 second and the measure of recognition was the number of trials. A 3-second interval was observed between trials. One hypothesis was that "the mean number of trials to recognition is significantly greater for death words than for neutral words" (Golding et al., 1966, p. 361).

Golding et al.'s (1966) study found that death-related words were significantly more difficult to recognize as compared to neutral words. The inference is that death related words have a high emotional content. This inference would be consistent with Brown's (1961) belief that perceptual defense is a function of stimulus emotional.

Measurement of covert death anxiety with the Color Word Interference Test. White, et al. (1983) conducted a study to evaluate the effect of systematic desensitization on twenty-three sophomore nursing students who were identified as highly death anxious. The participants were selected from 73 volunteers out of 110 class members in the sophomore class at the Saint Louis University School of Nursing. The 73 volunteers were initially given the Templer Death Anxiety Scale and the Revised Livingston and Zimet Death Anxiety

Scale. Scores were converted to z-scores with the scores on both tests averaged. The students, who had a combined z-score of .50 standard deviation above the mean of the pool of volunteers, were considered highly death-anxious. Of the 40 students thus designated, 31 agreed to participate in the research. These 31 participants were then given the Color Word Interference Test (CWIT), in which neutral and death words are embedded in colors. Then the subjects were required to read the color of the various words, disregarding the content. Twenty-four of the 31 volunteers were found to be highly death-anxious, with a score of .50 standard deviation above the mean.

White's et al. (1983) study (measuring covert death anxiety), showed that persons rated high in death anxiety on the basis of pencil-and-paper questionnaires also tended to be in the death-anxious range as measured by the CWIT (24 persons out of 31). This was similar to the relationship found in another study by Peal, Handal, and Gilner (1981).

Feifel and Branscomb (1973) used a variant of the Color-Word Interference Test in a study of 371 persons with various demographic characteristics. These researchers required the subject to read the color of a word, disregarding its content. The subject was presented with five lines of 10 death words alternated with five lines of 10 neutral words, which were equally balanced on color representation, syllable content, and frequency of usage. The results were scored based

on the mean differential reaction time to the color of the two groups of words. The authors' indicated test-retest reliability after six months was .79 on the "mental patients" and .82 on the healthy subjects.

Handal et al. (1984) described the CWIT as a preconscious measure of death anxiety. However, they noted that the only finding of validity for the CWIT is the study by Feifel, Freilich and Herman. The researchers concluded that terminally ill patients averaged 5.46 seconds longer to say the color of the death words than to say the color of neutral words.

Word association measures of covert death anxiety. Feifel and Hermann's (1973) investigation of the fear of death incorporated a multilevel criterion for mentally ill persons and a control group of normal subjects. One of the measures utilized to measure covert death anxiety was a word association test. This test consisted of the presentation of 10 death stimuli words and 10 neutral words, matched for frequency of usage and number of syllables. These words were randomized in presentation and scores were developed based on overall mean differential time of reaction and recall. The results indicated no significant difference between groups, although both groups repudiated fear of death at the conscious level but demonstrated dread of death at the unconscious level.

In a later study Littlefield and Fleming (1984) also used the Word Association test to measure recognition time for both

neutral and death associated words. As the theoretical basis for their study these investigators cited the perceptual defense-vigilant literature, which indicate that repressors require more time to recognize and respond to threatening stimuli than do people who are perceptually vigilant. When the scores were correlated with posttest scores on a direct measure scale (Temper DAS), Littlefield and Fleming (1984) discovered that people who score high on the direct measure of death anxiety also had a tendency to score high on the measurement of unconscious death anxiety with the word association scale.

Subliminal methods for measuring covert anxiety. Collins (1974) in a doctoral dissertation, "A Procedure for the Utilization of Subliminal Perception to Assess and Modify Personality," summarized his extensive review of the literature on subliminal perception. The pertinent parts of his review as it relates to this paper are as follows:

> i. the stimulus must be presented at a level which is below conscious awareness and does not allow partial cues to enter consciousness (Spence & Holland, 1962); ii. S must be relaxed (Spence et al., 1968), and when required to respond, to do so subjectively rather than objectively (Fox, 1960). (Collins, 1974, pp. 27-28)

Collins (1974) further noted that "word length" and "frequency of exposure to the letter pattern" (p. 28) influenced the visual recognition threshold. He stated that

"the effect of subliminal stimulation on conscious behavior-the failure to consciously perceive a stimulus-does not mean that it will not cause a response" (pp. 28-29). Rather, his review indicated that "a subliminally perceived stimulus can affect conscious behavior" (p. 29). This study provided substantial support for the use of subliminally perceived death symbols to tap the covert death fears and measure them with appropriate physiological autonomic measurement devices.

Magri (1979) in his doctoral dissertation explored the effects of sexual guilt on the GSR response of his subjects to the subliminal presentation of sexual words. His subjects were 74 college females who were given the Mosher Forced Choice Guilt Inventory, which was used to divide the subjects into "high guilt" and "low guilt" groups. The subjects were then randomly assigned to either the treatment or the control group. The subjects were seated in front of a tachistoscope, and two recording electrodes for the GSR were attached to their left hand. Subsequently, base-line GSRs were established, and neutral stimulus were presented on the tachistoscope with the speed of presentation increased until the individual threshold was reached. Then the experiential stimuli were randomly presented 20 percent below the lowest reported level of awareness for each subject. Subsequently, the subjects were tested with a 14-item Adjective Check-list to test their affective reactions.

The results of Magri's study indicated that the subliminally presented stimuli did not produce significant results in the affective arousal of the subjects. However, the experimenter believed that the negative results were reflective of a very conservative rate of stimulus presentation and the relative weak strength of the sexual stimulus words.

The subliminal presentation of the stimuli at 20 percent below the threshold level was probably the primary cause of the negative result in Magri's study. Consequently, any stimulus presentation rate of death symbols must be at a presentation rate that would ensure that the stimulus was actually perceived subliminally. Therefore, the use of a 4 millisecond rate, as recommended by Silverman (1976), may have produced different results.

In another study employing subliminal presentation of stimuli, Silverman (1976) used a tachistoscope to present subliminal stimuli which he believed represented wish fulfillment needs of his subjects in an investigation of a psychoanalytic based hypothesis. His procedure which he named "subliminal psychodynamic activation" (SPA) has been employed with both psychiatric and normal populations.

Balay and Shevrin (1988) reported inconsistent results in a critical review of the literature on studies of the effectiveness of SPA to generate significant responses to subliminal presentation of stimuli. Other researchers,

however, noted that this critical review was based on studies which did not exactly replicate the SPA as used in studies by Silverman. For example, in a study of normal female undergraduates, Geisler (1986) employed the SPA method to evaluate the effects of repression to avoid conflicts over sexual wishes with two different groups of subjects with different levels of personality development. The stimuli, that were presented included neutral control stimuli and stimuli that was hypothesized to intensify or reduce conflict. A subsequent recall test was used to measure the effects of SPA on the subjects. The results indicated only that the conflict-intensification stimuli affected recall, but only from in the "high" development group, in which when the stimuli were presented before the material which was to be remembered. This study suggests that special conditions may be required to develop evidence in studies of repression.

Likewise, Dauber (1984) employed SPA in a study of 36 depressed female undergraduates and noted that the relevance of the content of the stimuli for the particular subjects was a major factor in achieving significant results.

Another difficulty with employing SPA has been the lack of a valid theory which explains how the subliminal stimuli are encoded during SPA to influence subsequent behavior. Although Silverman (1985) accepted some of the earlier criticisms, he noted that some of the studies which failed to show significant results with the use of SPA had design

deficiencies.

In a review of Silverman's earlier work Haspel (1978) noted that some of the studies developed measures of pathology with projective tests of questionable validity, and that the results of the studies were based on less vigorous methods of data analysis (one-tail t-tests, series of t-tests, etc).

Haspel and Harris (1982) challenged Silverman's basic "assertion that changes occur only when conflictual stimuli are presented subliminally" (p. 438). These authors cited studies in which "supraliminal [stimuli] (i.e., stimuli presented for 10 sec)" (p. 438) produced some effects similar to results produced by SPA, suggesting that a degree of covert anxiety was perhaps interwoven with the overt anxiety. These investigators failed in an attempt to replicate a Silverman study of the effect of subliminal presentation of stimuli designed to stimulate the oedipal wishes on 72 normal college males (Haspel and Harris, 1982).

One explanation offered by the Haspel and Harris (1982) for the mixed results of the various studies using SPA:

> ...is that Silverman et al.'s hypotheses were incorrectly inferred from psychoanalytic theory. It may be that to say that all male oedipal conflicts can be tapped by such statements as BEATING DAD IS OK and BEATING DAD IS WRONG is a gross over simplification. Rather, the conflict may be manifested in each individual in a unique way. (p.442).

In contrast to the failure to replicate Silverman's Oedipal Dart Throwing study by Haspel and Harris, (1982) a later attempt by Palumbo and Gillman (1984) was successful. The measuring unit in this study of the stimulation of oedipal wishes by SPA was improvement in the dart throwing ability of the subjects, which is a behavioral-observational measure. Consequently, measures of changes in affect due to the influence of the SPA method may be more sensitive and less subject to perifocal influences in the surrounding area. Additionally, as some of the studies indicate, the results are very sensitive to special conditions which make exact replication difficult (Geisler, 1986).

Also, the selection of the stimuli to stimulate psychoanalytic-hypothesized wish-fulfillment behavior in subjects is critical and may vary due to the individuality of the subjects. Since death words and symbols are relatively universal in terms of meaning, the individual differences in the subject's response to death stimuli may not be as variable as oedipal stimuli.

Autonomic measurement methods. Since the late 1950s many of the studies of death anxiety which employed autonomic measurements of affective change in subjects, have relied on the GSR. However, Hodgson and Rachman (1974) noted that "in general, there is evidence of some measure of agreement between subjective changes and heart-rate changes but skin-conductance often displays a wayward tendency which suggests

the influence of factors other than fear" (p. 323).

Hodgson and Rachman (1974) went on to note that one of the key differences between heart rate and GSR was the "habituation of the skin-conductance response" (p. 323) which "was due to changes in some response system not related to anxiety" (p. 323). Possible "skin conductance response is a multisystem response which is only loosely coupled to subjective anxiety" (pp. 323-324).

Also noted were the following artifacts, important to this study, which could confound results based on heart rate measurements:

(a) The range of scores affects the correlation coefficient."

(b) Change scores may be a function of initial level.

(c) Apparent desynchrony may result if measurements in the different response systems are associated with different levels of threat.

(d) Unreliability of measures will reduce intercorrelations and, therefore, the apparent synchrony between measures. (Hodgson & Rachman, pp. 324-325).

Gauthier and Marshall (1977) used heart rate as one of their measures in a study of snake-phobic female subjects who manifested marked fear. These researchers chose the heart rate measurement unit over the GSR, not only because of the studies suggesting "that skin conductance (GSR) is a multisystem

response...but also because there are indications that skin conductance responses habituate more rapidly" (p. 404) than heart rates.

Death stimuli used in measuring covert death anxiety. Meissner (1958) initially selected the following 20 death symbol words from psychoanalytic literature: "bird, journey, candle burning out, to burn, across the bridge, sleeping person, train trip, old man, statue, to drive away, black, water, the silent one, to depart, thunder, stranger, terminal, the end, four, the thirteenth" (p. 295). These words were then "randomly mixed with 30 randomly selected words from the Kent-Rosandoff Word List to compose the experimental word association list" (p. 295). The neutral and death symbol words were empirically tested with responses from another group from the same population. In addition the "same 20 death symbol words were also used to compose a written test for the subjects following the verbal presentation of these words". The subjects were given the written test and told: "This is a test of interassociation. Try to group as many of the words as possible under a common association or concept or common idea to which they refer" (p. 295). "This test was used to verify the content of the responses to these death symbol words when they were presented in the experiment" (p. 295).

Templer (1971) selected the following death words for use in his study: "funeral, death, burial, suicide, murder, casket, cancer, cemetery, eternity, corpse". The neutral words

were: "hat, lamp, book, paper, trunk, spring, rug, chair, horse, and water". The affective words were "love, father, breast, fire, intercourse, mother, fight, drink, suck, and dirt". The neutral words and the affective words were derived from the word association test of Rapaport. The procedure for presenting these words to the subjects was as follows:

> A word from each of the three categories was grouped together for 10 consecutive sets. The order of the words within a set was randomly determined. The specific word from each category was also randomly determined. This arrangement permitted a comparison of GSR magnitude to words within a set without consideration of base levels, in addition to controlling for habituation. (p. 212)

Templer (1971), as a validity check on the selection of the word list, correlated the responses on the GSR to the different word groups. He found a significant correlation (.30, $p.<.05$) between the DAS and the death-GSR measure. He also found that the death words used were specific to the concept of death rather than a response given to any other affective concept.

Comparable Populations.

There have been a number of studies of the affect of death anxiety in nursing students. The studies have employed a number of instruments to measure the multidimensional aspects of death anxiety. The variety of covert instruments used in these studies include including subliminal

presentation of death words and symbols. However, the results of these studies as noted earlier have been equivocal because of the lack of correlation between the various measures of covert death anxiety. As a result, a number of researchers have noted the importance of developing valid and reliable measures of covert death anxiety for use with the nursing population (Fleming, 1977; Handal, 1980; Murray, 1974; White et al., 1983).

Supplemental Research on Self-Report Measures of Anxiety

The Templer Death Anxiety Scale (DAS). The Templer Death Anxiety Scale (Templer, 1970) is a self-report inventory consisting of 15 true/false questions. It was designed to be appropriate for a number of different populations. Scores range from 0 to 15, with 0 indicating no death anxiety and 15 indicating high death anxiety. Average scores generally range from 4.5 to 7.0 with a standard deviation slightly more than 3.0 (Handal et al., p. 347).

The DAS is one of the measures of overt death anxiety in the literature that have been frequently cited over the past ten years, and it is still being used in recent studies (Gilliland and Templer, 1985; Hayslip and Bussey, 1986; Lattanner and Hayslip, 1984; Robinson and Wood, 1984). It has also been used extensively as a pretest-posttest outcome measure of death education workshops and with nursing populations (Durlak, 1978; Martin, 1982; Murray, 1974; Whelan and Warren, 1980; White et al., 1983).

The State Scale of the State-Trait Anxiety Inventory (STAI) Form Y (Spielberger, Gorsuch, Lushene, Vagg, and Jacobs, 1983) states:

> ...the essential qualities evaluated by the STAI S-Anxiety scale are feelings of apprehension, tension, nervousness, and worry...how people feel right now...or in a variety of hypothetical situations. Scores on the S-Anxiety scale increase in response to physical danger and psychological stress and decrease as a result of relaxation training. The S-Anxiety scale has been found to be a sensitive indicator of changes in transitory anxiety experienced by clients and patients in counseling, psychotherapy, and behavior-modification programs. The scale has also been used extensively to assess the level of S-Anxiety induced by stressful experimental procedures and by unavoidable real life stressors such as imminent surgery, dental treatment, job interviews, or an important school tests. (p. 2).

The "STAI was developed for use with high school and college students and adults", (Spielberger et al., p. 2) with the items "written below the sixth grade reading level" (Chaplin, 1984, p. 627). Chaplin (1984) states that the STAI:

> is by far the most widely used measure [of anxiety]. The State-Anxiety scale items are each rated on a four-point intensity scale, labeled "Not At All," "Somewhat," Moderately So,: and "Very Much So." Respondents are

instructed to indicate how they feel "right now" by blackening in the circle which surrounds the appropriate response number. (p. 626)

The STAI is a self-report inventory which may be administered either individually or in groups. The State Anxiety measure needs to be administered prior to a test of Trait Anxiety. Because of the disagreeable nature of some of the questions, establishing rapport may increase the candor of the responses (Chaplin, 1984).

Scores on the S-Trait can be interpreted directly, i.e., high scores mean more state anxiety and low scores mean less state anxiety. However, the specific meaning of an individuals level of anxiety must be interpreted with caution, because the norms are aggregate statistics, and what different individuals mean by the "very much so" and "somewhat" to indicate the extent of their anxiety may be very different (Chaplin, 1984).

Chaplin (1984) states that the reliability of the State Anxiety scale receives "high marks for technical merit" (p. 630). Chaplin noted that the range for internal consistency "across male and female samples of working adults, military recruits, and college and high school students" ranges from 86. to .95. The retest reliability ranged from .16 to.62. "This low level of stability for the State-anxiety scale is expected since responses to the items on this scale are thought to reflect the influence of whatever transient situational factors exist at the time of testing" (p. 630).

If the scale were stable over time, "there would be reason to question the construct validity" (p. 631).

Because of the high face validity of the State Anxiety items, however, the results are easy to fake, and consequently the use of this scale in a "demand" situation is questionable. (Chaplin, 1984) The manual provides norms for several groups, including normal adults in three age groups 19-39, 40-49, and 50-69, as well as for students and military recruits (Spielberger, 1983). These norms appear to be suitable for the age and occupation of the student nurse subjects of this study.

Abdel and Ahmed (1986) provided additional reliability and validity data for both the DAS and the STAI with a study involving 673 Egyptian males and 770 Egyptian females undergraduates. The results of the study on an Egyptian population was consistent with an earlier study using an American population which found a significant correlation between the Templer DAS and the Trait scale of the STAI, i.e., .42 (p. <.01 two tail), but an insignificant correlation between the DAS and the State scale of the STAI (Dickstein, 1978).

Summary of previous research and its relationship to the problem

Yalom (1980) hypothesized that covert death anxiety had a greater impact than overt death anxiety on the affect and subsequent behavior of individuals. Handel and Rychlak (1971)

found a curvilinear relationship between the R-S scale and the Templer DAS, a unidimensional measure of death anxiety, suggesting repression of death anxiety by some of the subjects. Kunzendort (1985) hypnotized subjects and found that covert death anxiety was higher than the subjects were consciously aware. Handal (1980) found higher death levels associated with less effective problem solving. In a study of the impact of death anxiety training for hospice volunteers, Hayslip and Walling (1985) found that, as the subjects' unconscious fears became conscious, they manifested a subsequent increase in death anxiety as measured by the Templer DAS. All of these studies suggest that covert death anxiety has a significant impact on the affect and behavior of humans.

Unfortunately, efforts to measure covert death anxiety empirically have developed very mixed results, with inconsistent correlations with other covert measures. Validity of these covert measures are questionable, as evidenced by the lack of consistent correlations with each other. Reliability of covert measures, with the exception of the CWIT, was not provided by the studies in the literature.

The following summarizes the major methods of empirically measuring covert death anxiety in the literature on death anxiety.

Meissner (1958) and Templer (1971) employed audio presentation of death words or symbols to measure the

affective response of the subjects with the GSR. Both achieved significant results. However, Meissner's subjects were Roman Catholic seminarians, and Templer's subjects were psychiatric patients. The considerable difference between these tested populations and the student nurses preclude generalizing from one to another.

Additionally, later studies suggest that heart rate changes may be a better physiological measure for changes in affect than the GSR since the GSR may be a multisystem response with habituation problems (Gauthier and Marshall, 1970; Hodgson and Rachman, 1974).

Handal et al. (1984) and Fleming (1977) attempted unsuccessfully to utilize supraliminal measures of covert death anxiety. Handel et al., (1984) attempted a multimethod study of covert death anxiety but was unable to establish validity because the various measures did not correlate. Fleming's (1977) study failed to find a significant correlation with the R-S scale, contrary to previous studies in the literature. White et al. (1983) attempted to employ the CWIT (a supraliminal embedded measure) as part of a multimethod of measuring covert death anxiety, but also found that the various covert measures did not significantly correlate.

Word association measures of covert death anxiety were attempted by Littlefield and Fleming (1984). However, this study developed significant correlations between overt death

anxiety and covert death anxiety, suggesting that word association tests may not sufficiently discriminate between overt and covert death anxiety.

In addition to these mixed results, very little reliability or validity data on these covert measures exist in the literature. Consequently, presentation of death stimuli below recognition level, which obviously taps below the level of awareness, appears to be the only covert means of measurement which currently has at least face validity. The overt self report death anxiety measures (Templer DAS) are primarily trait measures which provide very little information over the short term on the effect of methods or techniques to reduce death anxiety in individuals. Thus the overt trait measures of death anxiety are of limited value to assess the effects of techniques for reducing death anxiety, particularly over the short term following application of the technique.

Generally the literature supports the notion that death anxiety is a multidimensional construct (Choron, 1964; Collett & Lester, 1969; Durlak and Kass, 1981). Likewise, the literature suggests the need for multimethods of measuring these multidimensional characteristics of death anxiety (Durlak and Kass, 1981; Handal et al., 1984; White et al., 1983).

The intent of this study is to develop and test a procedure to measure empirically the effects of covert death anxiety on student nurses for use by health professionals and

nursing faculty to enhance their evaluation of the effectiveness of various techniques and methods to reduce death anxiety. Consistent with the above considerations, the following instruments appear to be best suited for incorporating into the psychometric procedure for measuring the level of death anxiety in student nurses: (1) the Templer DAS self-report (15 items) overt trait measure; (2) the self-report (20 item) State Anxiety Scale of the STAI (3) and, in order to contrast overt and covert death anxiety, the presentation of death words below and above the recognition level of the subjects with their physiological response being measured by change in heart rate variance.

Chapter 3

Procedures

Sample Population

The sample for the present study were student nurses enrolled in the Associate Degree Nursing Program of J. Sargeant Reynolds Community College in Richmond, Virginia. The sample consisted of 44 student nurses who volunteered to be subjects for the study. The student nurses were offered the opportunity to participate in the study by their professors during the first week of classes in January 1990. The student nurses were told that this was a study to evaluate the effect of a certain kind of stress factor associated with nursing. They were further advised that their individual results would be confidential and only group data would be reported.

Definition of Terms

The following definitions of terms are provided to clarify the major constructs of this study and to operationalize the use of these terms for the purposes of this study.

a. Affective response: The state measure of the State Trait Anxiety Inventory immediately following presentation of either affectively neutral words or words associated with

death.

b. Covert stimulus (C): A word stimulus, visually presented at such a rapid rate that it cannot be identified correctly by the subject at a conscious or overt verbal level.

c. Overt stimulus (O): A word stimulus visually presented for one second.

d. Covert death word stimulus (CD): A death-associated word stimulus, presented at such a rapid rate, that it cannot be identified correctly by the subject at a conscious or overt verbal level.

e. Overt death word stimulus (OD): A death-associated word stimulus, presented for one second.

f. Covert neutral word stimuli (CN): An affectively neutral word stimulus, presented at such a rapid rate that it can not be identified correctly by the subject at a conscious or overt verbal level.

g. Overt neutral word stimulus (ON): An affectively neutral word stimulus, presented for one second.

h. Overt death anxiety: Anxious feelings a person experiences when he or she becomes aware of thoughts regarding death and/or when she or he is presented with overt death word stimuli. For purposes of this study, the term "overt death anxiety" includes the following terms found in the literature: overt, conscious, direct, verbal, and cognitive death anxiety.

i. Covert death anxiety: Anxious feelings a person experiences when presented with covert death word stimuli. For purposes of this study, the term "covert death anxiety" includes the following terms found in the literature: covert, unconscious, nonverbal, indirect, and affective death anxiety.

j. Heart rate change: The difference between the average base heart rate less the average heart rate obtained during the presentation of word stimuli.

k. Net heart rate difference: (NETHR) The numerical value of this variable is the net difference between (1) the difference between the base heart rate and the heart rate of subjects receiving death associated word stimuli less (2) the difference between the base heart rate and the heart rate of subjects receiving neutral word stimuli. The equation for NETHR is: NETHR=[OD HR-Base HR]-[ON HR-Base HR] and/or NETHR=[CD HR-Base]-CN HR-Base HR].

l. Net State Anxiety Scale scores: (NETSA) the difference between the score on the State Anxiety Scale of subjects receiving death associated-word stimuli less the score on the State Anxiety Scale of subjects receiving neutral word stimuli.

Limitations of the Study

The constraints of research procedures and the compromises necessary to provide maximum protection for the human subjects must necessarily result in a number of limitations with respect to the generalizability and quality

of the finding of the study. The following are the most important of these limitations to the findings of the investigation:

(1) The subjects of the study are limited to volunteers, thus introducing the possibility of bias which may adversely affect generalizing the results to a broader nursing population.

(2) Ethical considerations dictated the selection of common death words frequently encountered by student nurses as the covert death word stimuli rather than using more potent anxiety-arousing stimuli such as pictures or personalized death images. Although a study by Templer (1971) found that these common death words evoke the necessary level of death anxiety to be measured adequately by the GSR, stronger death anxiety stimuli may increase the probability of a positive response.

(3) The use of self-report instruments to measure the response to the stimuli may be influenced by the subjects inclinations to be truthful, or may reflect the influence on their mood of current unique stresses and experiences which are not related to the study.

Statistical Hypotheses

1. There will be no significant ($p<.05$) difference in the NETHR of subjects receiving CD as contrasted with subjects receiving OD.

2. There will be no significant ($p<.05$) difference in the NETSA of subjects receiving CD as contrasted with subjects receiving OD.

3. There will be no significant ($p<.05$) correlation between the NETHR and the scores on the Templer Death Anxiety [trait] Scale.

Experimental Design

The overall design of this study is a counterbalanced two-treatment random-assignment contrast group experimental paradigm. This design produced a two-by-two-by-two analysis of variance with one within-subjects factor (response to death words versus response to neutral words) ordered by sequence of presentation and one between-subjects factor (covert versus overt mode of presentation of word stimuli). Within this design was a special correlational contrast of the relationship between the Templer Death Anxiety Scale and the NETHR. Physiological and self-report instruments were employed to measure changes following treatment in each of the groups.

a. The first part of the study contrasted the NETHR and NETSA with the overt and covert presentation of death associated word stimuli by order of presentation. This part provided data to test statistical hypotheses 1 and 2.

b. The second part provided a correlation of the self-report Templer Death Anxiety Scale with NETHR. This part of the study provided data to test statistical hypothesis 3.

The computers for presenting the tests and recording the

heart rate of subjects were set up in an inside room of the nursing department on the fifth floor of the Downtown Campus of J. Sargeant Reynolds Community College in Richmond, Virginia, during the second and third week of January 1990. During the testing period, the room was dedicated to this study and was closed off to other activity. All the tests were administered by one student nurse who was paid for her time by the researcher. Over a two-week period a total of 44 unpaid student nurse volunteers came to the testing room for participation in the study and, after signing the consent form, were randomly assigned to one of two treatment conditions with each treatment condition counterbalanced for order of presentation of neutral and death stimuli. Treatment group one received the covert word sets, and treatment group two received the overt word sets. In each group, to control for order of presentation effects, the neutral word sets were presented to half the subjects first and to the other half of the subjects last. The set of 10 affectively neutral words and a set of 10 death words were randomly presented four times over a period of two minutes on a Compac Portable III computer. Each set of words was counterbalanced as follows: Group (1A) covert neutral word set followed by covert death word set (CN followed by CD); (1B) covert death word set followed by covert neutral word set (CD followed by CN); Group (2A) overt neutral word set followed by overt death word set (ON followed by OD); (2B) overt death word set followed by

overt neutral word set (OD followed by ON).

The list of neutral and death words used in this study was the same as the list of words selected by Templer (1971) for use in his study and consists of the following: (1) Death words: "funeral, death, burial, suicide, murder, casket, cancer, cemetery, eternity, corpse" (2) Neutral words: "hat, lamp, book, paper, trunk, spring, rug, chair, horse, water".

The covert words were randomly presented visually on a Compaq Portable III computer at a timed rate of 16.7 microseconds (16.7 microseconds is the refresh time of the computer screen) with a 2.9833 second delay between each presentation. The overt words were randomly presented visually at a timed rate of one second with a two second delay between each presentation. (See Appendix for the MEL experimental software program settings and timing options employed to present the word stimuli.)

Before and during the presentation of each word set, the heart rate of each subject was obtained by an optic sensor attached to the subjects finger and recorded by a second Compac Portable computer using the Cardiovascular Fitness Lab software program. This software program provided a visual display on the computer screen of the heart rate of the subject plotted at one second intervals. The heart rate for each subject was stored as a computer file on a 5 1/4 inch floppy diskette.

Initially, while the subject was acclimated to the equipment, the heart rate of the subject was visually monitored via the computer screen by the administrator of the testing procedure, but was not recorded. Subsequently, after a pattern of stable heart beats appeared on the computer screen, a base heart rate was recorded over a period of 120 seconds immediately prior to the presentation of each set of word stimuli. Immediately after the baseline heart recording, a word set was presented for 120 seconds and the heart rate of the subject was recorded during the presentation.

All subjects were administered the self-report State scale of the State Trait Anxiety Inventory via the computer immediately following the presentation of each set of word stimuli. Subsequently, the Templer 15-item self-report Death Anxiety Scale was administered via the computer to all subjects.

The following presents the sequence described above in chart form:

Phase	Procedure	Time
1. Acclimation # 1	Heart rate monitoring visual by test administrator	Until heart rate stable
2. Baseline 1	HR recorded by computer	120 seconds
3. Presentation of stimuli set 1	HR recorded by computer	120 seconds

4. State Scale	Computer test	No limit
5. Acclimation #2	Visual by test administrator	Until heart rate stable 6.
Baseline 2	HR recorded by computer	120 seconds
7. Presentation of stimuli set 2	Recorded by computer	120 seconds
8. State Scale	Computer test	No limit
9. Templer DAS	Computer test	No limit

To check whether the presentations to treatment group one subjects were indeed below recognition level, these volunteers were asked to recall if they could any of the words presented during the testing, and their answers were recorded on paper by the test administrator. This question was asked immediately following the administration of the Templer DAS. Subsequently treatment one subjects were verbally advised of the actual neutral and death-associated words presented in the test. All the volunteers were debriefed following the test and were told the purpose of the study and asked not to discuss the purpose of the study or the words used in the study with anyone until the entire study was completed.

Instrumentation

A computer-administered and computer-scored version of the two self-report psychometric instruments, the Templer Death Anxiety Scale and the State measure of the State-Trait Anxiety Inventory, were used in the present study.

Software programs have been developed recently for micro computers, allowing them to be used in lieu of the traditional tachistoscope for experimental studies (Diener and Smee, 1984; Mapou, 1982; (Schneider, 1988). Up until now, the limitations of the display screens have precluded using the computer "T scope" for experiments requiring low subliminal presentation rates. Psychology Software Tools, Inc. (511 Bevington Road, Pittsburgh, PA 15221) has recently (fall 1988) developed a software program (MEL) with timing options. The program has the capability of creating a masking effect and thus enables the computer display to effectively present subliminal stimuli. This software program was employed on a Compac Portable III to present the death and neutral words stimuli. The heart rates of the subjects were monitored and recorded with the Cardiovascular Fitness Lab kit by HRM Software marketed by Queue (562 Boston Avenue, Bridgeport, CT 06610). This kit includes a finger-attached optic heart rate monitor which is designed to plug into a conversion card in the computer for monitoring the heart beats of the subject. This software program stores the heart rate information in a computer file. The number value stored in the computer file is the number of ticks of the computer's internal clock. The ticks measure the time between each heart beat of the subject. The data is accurate to 100 ticks of the computer per second carried to the fourth decimal place. For example, if there were exactly 100 ticks between each heart beat of the subject

then the equivalent heart rate would be 1 beat per second or 60 heart beats per minute. The computer file would then contain a numerical value of 100 for each heart beat occurring over the time of the measurement.

Statistical Analysis

Statistical hypotheses 1 and 2. The change in heart rate and the difference in scores on the State Anxiety Scale were analyzed by a SPSS-X generated test for significant differences at the .05 level. A two-by-two-by-two ANOVA was obtained on the two dependent variables (NETHR AND NETSA) by word type (neutral vs death) by mode of presentation (overt vs covert) and by order of presentation of word set stimuli. This analysis was used to reveal any differences in word type (neutral vs death) by order of presentation for both the covert and overt factor, and for any interaction between these factors.

Research Hypothesis 3. All subjects were administered the Templer 15-item self-report Death Anxiety Scale immediately following the last administration of the State Anxiety Scale. The data was analyzed by a SPSS-X Pearson Product Moment correlation coefficient. The dependent variable was the score on the Templer Death Anxiety and the independent variable was NETHR.

Chapter 4

ANALYSIS OF RESULTS

The results of the present study, investigating a procedure to measure the effects of covert death anxiety on the psychological and affective response of student nurses, are presented below. These results are organized by findings for each of the three research hypotheses, individually specified in the following order:

a. Physiological responses to death-associated word stimuli presented below and above subjects' recognition level threshold

b. State anxiety responses to death-associated word stimuli presented below and above subjects recognition level threshold

c. Correlation of the Templer Death Anxiety Scale to the physiological responses of the subjects to the presentation of death-associated word stimuli.

Physiological responses to death-associated word stimuli presented below and above subjects' recognition level threshold

The first null hypothesis concerns the physiological response to death-associated stimuli. It states that there will be no significant difference ($p. < .05$) in the NETHR of

subjects receiving CD as contrasted with subjects receiving OD. Table 1 displays the cell means and standard deviations for changes in the heart rate of subjects receiving these word stimuli. The table is divided into the between-subjects mode of presentation (covert versus overt) and within subjects neutral and death word type treatment conditions, and presents the mean heart rate change and standard deviation for each mode of presentation, of neutral and death-word associated stimuli ordered by the sequence of presentation.

An analysis of variance was performed with the NETHR being the dependent variable. The results of the analyses of variance by treatment (both within-subject and between subject factors) and by order of presentation are presented in Table 2. The resulting F ratio (F = 3.47, p <.070) for mode of presentation (overt versus covert) by word type (neutral versus death) was not significant at the p <.05 level. There were no significant order-of-presentation effects by word type by mode of presentation (F= 3.150, p<.084). The first null hypothesis was accepted.

TABLE 1

Table of cell means and standard deviation for changes in the heart rate of subjects

FACTOR		MEAN	STANDARD DEVIATION	NUMBER OF SUBJECTS
NEUTRAL WORDS				
(1) COVERT STIMULI				
TEST 1A	ORDER-1	.39035	.28288	11
TEST 1B	ORDER-2	.16658	1.21416	11
(2) OVERT STIMULI				
TEST 2A	ORDER-1	1.08025	2.32176	11
TEST 2B	ORDER-2	.40950	1.87122	11
DEATH WORDS				
(1) COVERT STIMULI				
TEST 1A	ORDER-1	1.82274	2.61134	11
TEST 1B	ORDER-2	.28783	1.26066	11
(2) OVERT STIMULI				
TEST 2A	ORDER-1	.10420	1.36391	11
TEST 2B	ORDER-2	.80505	2.74909	11

Order of presentation 1: Neutral words followed by death words

Order of presentation 2: Death words followed by neutral words

TABLE 2

Table of results of ANOVA of heart rate changes

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F RATIO	SIG
BETWEEN SUBJECTS					
MAIN EFFECTS					
COVERT/OVERT	.00575	1	.00575	.00097	.975
ORDER OF PRESENTATION	5.84484	1	5.84484	.98380	.327
INTERACTION					
COVERT/OVERT BY ORDER PRESENTED	6.19115	1	6.19115	1.04209	.313
ERROR TERM	237.64250	40	5.94106		
WITHIN SUBJECTS					
MAIN EFFECTS					
NEUTRAL/DEATH	2.3469	1	2.34629	.97360	.330
INTERACTION					
COVERT/OVERT BY NEUTRAL/DEATH	8.37035	1	8.37035	3.47331	.070
ORDER PRESENTED BY NEUTRAL/DEATH	.21304	1	.21304	.08840	.768
COVERT/OVERT BY ORDER PRESENTED BY NEUTRAL/DEATH	7.59062	1	7.59062	3.14976	.084
ERROR TERM	96.39627	40	2.40991		

State anxiety responses to death-associated word stimuli presented below and above subjects' recognition-level threshold

The second null hypothesis concerns the subjects' affective or state anxiety response to death-associated stimuli. It states that there will be no significant ($p<.05$) difference in the NETSA of subjects receiving CD as contrasted with subjects receiving OD. Table 3 is a table of cell means and standard deviations for the subjects'scores on the State Anxiety Scale. The table is divided into between subjects (covert versus overt mode of treatment) and within subjects neutral versus death word type treatment conditions, and presents the mean State Anxiety Scores and standard deviation for each mode of treatment (covert versus overt), ordered by the sequence of word type treatment (1 or 2). An analysis of variance was performed, with the NETSA being the dependent measure. The results of the analyses of variance by treatment (both within-subject and between subject factors) and by order are presented in Table 4. The resulting F ratio for mode of treatment (covert versus overt) by word type (neutral versus death) ($F = .071$, $p<.791$) was not significant. However, the triple interaction of word type, presentation mode, and order of presentation ($F= 4.272$, $p<.045$) was significant, indicating that there were differences in state anxiety. Consequently, the second null hypothesis was rejected.

TABLE 3

Table of cell means and standard deviations for scores on the State Anxiety Scale

FACTOR	MEAN	STANDARD DEVIATION	NUMBER OF SUBJECTS
NEUTRAL WORDS			
(1) COVERT STIMULI			
TEST 1A ORDER-1	31.36364	8.36986	11
TEST 1B ORDER-2	30.27273	12.21549	11
(2) OVERT STIMULI			
TEST 2A ORDER-1	35.81818	12.50454	11
TEST 2B ORDER-2	29.27273	5.33087	11
DEATH WORDS			
(1) COVERT STIMULI			
TEST 1A ORDER-1	29.54545	7.17445	11
TEST 1B ORDER-2	34.54545	9.09245	11
(2) OVERT STIMULI			
TEST 2A ORDER-1	30.81818	8.87489	11
TEST 2B ORDER-2	36.00000	5.83095	11

Order of presentation 1: Neutral words followed by death words

Order of presentation 2: Death words followed by neutral words

TABLE 4

Table of results of ANOVA of State Anxiety Scale scores

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F RATIO	SIG
BETWEEN SUBJECTS					
MAIN EFFECTS					
COVERT/OVERT	52.54545	1	52.54545	.34452	.561
ORDER OF PRESENTATION	8.90909	1	8.90909	.05841	.810
INTERACTION					
COVERT/OVERT BY ORDER PRESENTED	38.22727	1	38.22727	.25064	.619
ERROR TERM	6100.63636	40	152.51591		
WITHIN SUBJECTS					
MAIN EFFECTS					
NEUTRAL/DEATH	24.04545	1	24.04545	2.35163	.133
INTERACTION					
COVERT/OVERT BY NEUTRAL/DEATH	.72727	1	.72727	.07113	.791
ORDER PRESENTED BY NEUTRAL/DEATH	436.54545	1	436.54545	42.69393	.000
COVERT/OVERT BY ORDER PRESENTED BY NEUTRAL/DEATH	43.68182	1	43.68182	4.27206	.045
ERROR TERM	409.0000	40	10.22500		

Figure 1 below graphically illustrates the interaction of the order of presentation and overt and covert mode of treatment and neutral stimuli with the subjects scores on the State Anxiety Scale.

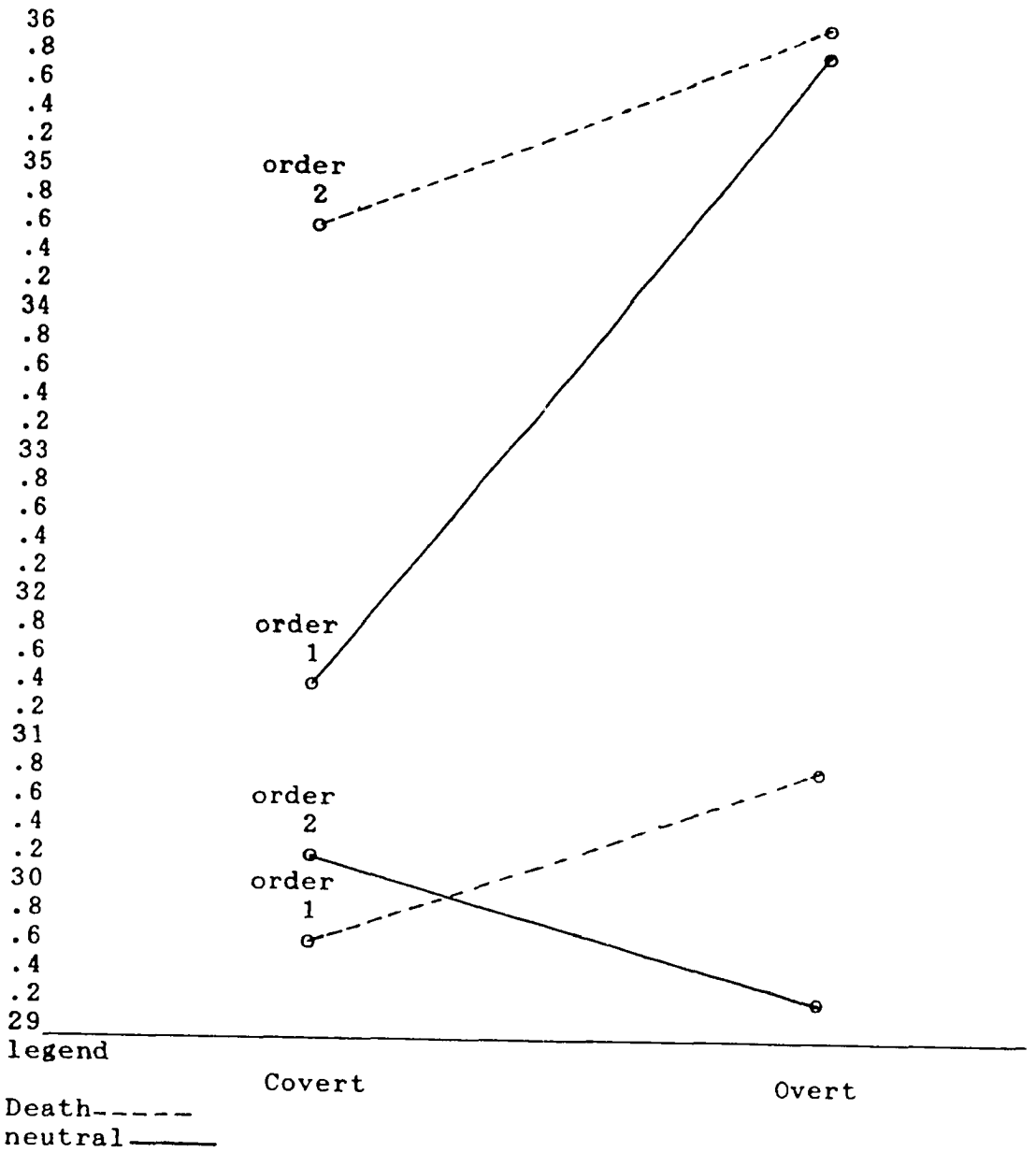
The mean State Anxiety Scale scores were plotted on the y axis with the scores associated with covert and overt presentation of neutral and death stimuli running from left to right respectively on the x axis. The following are suggested by the data (see Tables 3 and 4 and Figure 1):

(a) The level of mean State Anxiety Scale scores increased on the neutral/death (order 1) presentation of death associated word stimuli from the covert level (29.545) to the overt level (30.818). Likewise, the level of mean State Anxiety Scale scores increased on the death/neutral (order 2) presentation of death-associated word stimuli from the covert level (34.545) to the overt level (36.00). It is of interest to note that the two lines are almost exactly parallel to each other. The direction of incline running upward from the covert to the overt level is consistent with the characteristic of a self-report inventory being more closely associated with a conscious or overt measure of anxiety.

(b) The level of mean State Anxiety Scale scores increased on the neutral/death (order 1) presentation of neutral word stimuli from the covert level (31.364) to the overt level (35.818). This line moves upward at a sharper angle but still more or less parallels the lines representing

Figure 1

MEANS OF STATE ANXIETY SCORES BY COVERT & OVERT BY ORDER



state scores following the administration of the death-associated word stimuli. However, the mean state anxiety score following the death/neutral (order 2) overt presentation of neutral stimuli (29.272) is lower than the mean state anxiety scores following the death/neutral (order 2) covert presentation of neutral stimuli (30.273). These scores are represented by a line descending from left to right almost exactly opposite to the parallel lines of the other three combinations.

Correlation of the Templer Death Anxiety scale to the physiological responses of the subjects to the presentation of death-associated word stimuli

The third null hypothesis concerns the correlation of the Templer Death anxiety Scale to the NETHR. A Pearson Product Moment correlation coefficient of $r = -.0876$ ($p < .286$) was obtained from the correlation of NETHR of the subjects to their scores on the Templer Death Anxiety Scale. The correlation coefficient was not significant and the third null hypothesis was accepted.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The present study was designed to develop and evaluate a procedure for measuring covert death anxiety for utilization by nursing faculty in the education of nursing students. Thus practical considerations required that the instruments chosen for utilization in the study be readily available to nursing faculty, economical, easy to use and easy to interpret, as well as meeting rigorous psychometric standards for validity and reliability.

The literature suggests that fear of death is a multi-dimensional construct involving overt and covert levels of death anxiety (Choron, 1964; Collett & Lester, 1969; Durlak and Kass, 1981). Yalom (1980) hypothesized that covert death anxiety has a greater impact than overt death anxiety on the affect and subsequent behavior of individuals. He proposed a model of existential psychodynamics which conceptualized existential concerns of the individual (one of which is the fear of death) as the cause of pathological behavior. This model is derived in part from a variation of Freud's psychodynamic model of mental functioning; i.e., the concept of conflicting forces existing within the individual at

various levels of consciousness and unconsciousness resulting in both adaptive and maladaptive behavior, thoughts, and feelings. Consequently, the evaluation of techniques and educational methods to address high levels of covert death anxiety in student nurses requires outcome studies employing effective instruments for measuring pretest and posttest levels of covert death anxiety. Additionally, the instruments must be able to measure all dimensions of death fears including overt and covert levels as well as state and trait changes in levels of death anxiety. There are a number of self report instruments available for measuring death anxiety as a unitary construct, but the very characteristics of covert death fears requires a measure which taps below the conscious level of the individual. Within the above constraints, a self-report inventory for state anxiety (State scale of the State Trait Anxiety Inventory) and trait anxiety (Templer Death Anxiety Scale) combined with a physiological measure employing mean heart rate change in response to the presentation of neutral and death word stimuli above and below the recognition level was incorporated into a comprehensive computerized procedure for the study.

The purpose of the present investigation was to answer the following questions:

1. Can personal computers, which are readily available to nursing faculty, be employed as T-scopes to present stimuli below the recognition level threshold of subjects?

2. Can heart rate change be effectively employed as a physiological measure to differentiate the affective reaction of subjects to the presentation of death stimuli as contrasted to the presentation of neutral stimuli?

3. Is there a significant difference between the physiological response of student nurses to death word stimuli presented below their recognition threshold and their physiological response to death words or symbols presented above their recognition threshold?

4. Is there a significant difference in response scores on a general anxiety self-report measure of student nurses to death word stimuli presented below their recognition threshold as contrasted with death words presented above their recognition threshold?

5. Are self-report trait measures of death anxiety valid indicators of the level of physiological response in student nurses to the presentation of death stimuli?

To address these questions, the subjects were asked, following the test, to identify any of the words that had been presented in the test at a rate of 16.7 microseconds on the personal computer. In addition, three null hypotheses were formulated as follows:

1. There will be no significant ($p < .05$) difference in the NETHR of subjects receiving CD as contrasted with subjects receiving OD.

2. There will be no significant ($p < .05$) difference in the NETHR of subjects receiving CD as contrasted with subjects receiving OD.

3. There will be no significant ($p < .05$) correlation between the NETHR of subjects and their scores on the Templer Death Anxiety Scale.

The research sample consisted of 44 student nurse volunteers enrolled in the Associate Degree Program of J. Sargeant Reynolds Community College located in Richmond, Virginia. The subjects were randomly assigned to one of two groups. Group 1 subjects were presented with neutral and death associated word stimuli below their recognition level threshold (16.7 microseconds) in a design counter-balanced to control for order of presentation. There were 22 total students in group 1 with 11 of these students presented with neutral word stimuli first and death associated word stimuli second, and 11 of the students presented with death associated word stimuli first and neutral word stimuli second. A computer-administered State Anxiety Scale was given immediately following the presentation of each set of word stimuli. Immediately following the last administration of the State Anxiety Scale, a computer-administrated Templer Death Anxiety Scale was given.

Group 2 subjects were presented with neutral and death associated word stimuli above their recognition level threshold (1 second) again in a design counter-balanced to

control for presentation order effects. There were 22 students in Group 2 with 11 of these students presented with neutral word stimuli first and death-associated word stimuli second, and 11 of the students presented with death associated word stimuli first and neutral word stimuli second. The State Anxiety Scale and the Templer Death Anxiety Scale were administered to the subjects in Group 2 in the same manner as for the subjects in Group 1. The heart rate of the subjects was recorded on a second personal computer over a period of two minutes during the presentation of the neutral and death-associated word stimuli. The net difference in the within-subject mean heart rate (NETHR) was obtained by subtracting the change in mean heart rate obtained from the presentation of neutral words from the change in mean heart rate obtained from the presentation of death-associated words. This net heart rate change (NETHR) then became one of the dependent variables. Likewise, the net difference in the within-subject scores on the State Anxiety Scale (NETSA) was obtained by subtracting the total score on the State Anxiety Scale obtained immediately following the presentation of the neutral word stimuli from the total score on the State Anxiety Scale obtained immediately following the presentation of the death associated stimuli. This net change in state scores (NETSA) then became the second dependent variable.

Two-by-two-by-two ANOVAs were employed to reveal any differences for the dependent variables NETHR AND NETSA. A

Pearson Product Moment correlation coefficient was obtained to reveal any significant correlation between the Templer Death Anxiety Scale and the NETHR.

The data obtained from this study to develop the answers to the questions and test the null hypotheses are as follows:

Question 1. Can personal computers, which are readily available to nursing faculty, be employed as T-scopes to present stimuli below the recognition-level threshold of subjects?

There were 80 administrations of either neutral or death-associated words at a timed rate of one per 16.7 microseconds to 22 of the subjects, for a total of 1760 presentations. Following the test, each student was asked if she or he recognized any of the words. One student indicated that she thought she recognized the word "book" one time during the administration of the test. "Book" was one of the neutral words presented. Accordingly, one of the 1760 (22 x 80) presentations of words in the present study may have been recognized, leaving 1759 presentations which the subjects indicated were below their recognition threshold.

Question 2 and 3. The second question asks whether heart rate change can be effectively employed as a physiological measure to differentiate the response of student nurses to the presentation of death stimuli as contrasted with their response to the presentation of neutral stimuli. The third question asks whether there is a significant difference

between the physiological response of student nurses to death word stimuli presented below their recognition threshold and their physiological response to death words or symbols presented above their recognition threshold.

The answers to both questions 2 and 3 were evaluated by testing hypothesis 1, which states that there will be no significant difference ($p < .05$) in the NETHR of subjects receiving CD as contrasted with subjects receiving OD.

Hypothesis 1 was tested with an ANOVA. The difference in means was not significant $F = 3.47$, $p < .070$) and the null hypothesis was accepted.

Question 4. Is there a significant difference in response scores on a general anxiety self-report measure of student nurses to death word stimuli presented below their recognition threshold as contrasted with death words presented above their recognition threshold? The answer to this question was evaluated by testing hypothesis 2, which states that there will be no significant difference ($p < .05$) in the NETHR of subjects receiving CD as contrasted with subjects receiving OD.

Hypothesis 2 was tested by with an ANOVA. The result indicated that there was a significant interaction of word type, presentation mode and presentation order. This interaction indicates that there were differences in state anxiety, and the null hypothesis was rejected.

Question 5. Are self-report trait measures of death anxiety valid indicators of the level of physiological response in student nurses to the presentation of death word stimuli? The answer to this question was evaluated by testing hypothesis 3, which states that there will be no significant correlation ($p < .05$) between the NETHR of subjects and their scores on the Templer Death Anxiety Scale.

Hypothesis 3 was tested by correlating the within subject NETHR for all subjects with their scores on the Templer Death Anxiety Scale by a Pearson correlation coefficient. The correlation coefficient ($r=-.0876$, $p < .286$) was not significant, and the null hypothesis was accepted.

Conclusions and Recommendations

Question 1. Can personal computers, which are readily available to nursing faculty, be employed as T-scopes to present stimuli below the recognition-level threshold of subjects?

Prior studies in the literature utilized a tachistoscope to present stimuli below the recognition level of the subjects as a means of measuring the physiological response to affect-loaded stimuli. However, the technical lighting and angle requirements for the presentation of stimuli by a tachistoscope are very exacting, thus limiting the practicality of use by nursing faculty. In addition, the instrument is not readily available to nursing faculty in many community colleges. On the other hand, the personal computer

is readily available to most nursing faculty and the technical requirements for presenting stimuli can be achieved by a computer software program. Until recently (1988), the limitation of the display screen (decay rate of the letters on the screen) precluded using the computer "T scope" software programs to present stimuli at a rate below recognition-level thresholds. MEL, a software program marketed by Psychology Software Tools, Inc, incorporated timing options with certain masking effects allowing the effective presentation of stimuli at a rate of one per 16.7 microseconds (16.7 microseconds is the refresh cycle of a color monitor display screen) (Schneider, 1988). Out of 1760 presentations during the study there was only one possible word recognition reported. Additional studies are needed to determine what additional masking effects or timing options may be required to validate the use of a computer as a T scope.

Questions 2 and 3 relate to the use of mean heart changes to differentiate the physiological response of student nurses to the presentation of neutral stimuli from death stimuli above and below their recognition threshold.

The difference between the response of the dependent variable, NETHR, to overt and covert presentation of death word stimuli was not significant. The following are possible explanations for the lack of significant response.

1. The below-recognition level presentation of stimuli was not perceived at the covert level

2. The death-associated word stimuli did not differ from the neutral word stimuli in their emotional content,

3. The death word stimuli did not evoke a significant affective response in the subjects,

4. There is no agreement or correlation between subjective affective changes and heart rate changes,

5. The below recognition level presentation of stimuli does not produce a change in heart rate,

6. The mean heart rate change is not sufficiently responsive to presentation of below-recognition level stimuli to be utilized as an effective physiological measure for use in death anxiety studies.

The first explanation, which questions the ability of the subject to perceive stimuli at the covert level, is not consistent with previous research. Silverman (1976) and others have found that the behavior of subjects was influenced by stimuli presented as low as a 4 microseconds rate on a tachistoscope. In addition, one subject correctly identified the word "book" after it was presented at a 16.7 microseconds rate during the present study.

The second explanation, which questions whether the death-associated word stimuli differed in emotional content from the neutral, is not consistent with the study by Templer (1971), which validated the specific neutral and death-associated words used in the present study.

The third explanation, which states that the death word stimuli did not evoke a significant affective response in the subjects, is also inconsistent with the study by Templer (1971). He found that the death-associated words employed in the present study were related to the concept of death and were capable of producing an affective reaction which was measurable on the GSR and significantly different from the GSR response generated by the neutral words.

The fourth explanation, which states that there is no agreement between subjective affective changes and heart rate changes, is not consistent with the studies of Hodgson and Rachman, (1974) who found that "in general, there is evidence of some measure of agreement between subjective changes and heart-rate changes but skin-conductance often displays a wayward tendency which suggests the influence of factors other than fear" (p. 323).

The fifth explanation, which states that the below recognition-level presentation of stimuli does not produce a change in heart rate, was not consistent with some of the data developed in the present study. Although the NETHR of the CD versus the OD was not significant at the .05 probability level, the difference in the mean NETHR for CD versus OD was sufficiently large for a probability level of .07.

The sixth explanation, which states that the mean heart rate change is not sufficiently responsive to presentation of below-recognition level stimuli to be utilized as an effective

physiological measure for use in death anxiety studies, has merit because of the lack of studies in the literature supporting the correlation or agreement of mean heart rate change with the level of covert death anxiety. The present study utilized heart rate change as the physiological measure based on the successful employment of this measure with studies involving phobia subjects (Gauthier and Marshall, 1977) and the finding of Hodgson and Rachman (1974) of the "habituation of the skin-conductance response" (p. 323) which "was due to changes in some response system not related to anxiety" (pp. 323-324). Most previous studies of death anxiety utilized the GSR as the physiological measure.

The study of phobia subjects which used heart rate change, employed imagery of the feared object as the stimuli rather than the presentation of the stimuli at covert levels. Imagery that phobia subjects relate to a feared object may be more potent stimuli and may evoke a higher level of emotional response than the presentation of common death words below the recognition level of the subjects. However, ethical considerations dictated the selection of common death words frequently encountered by student nurses as the covert death word stimuli rather than using more potent anxiety-arousing stimuli such as pictures or personalized death images.

The size of the student nurse sample and the design of the study was based on the assumption that the death word stimuli would have a medium size effect. There was a

relatively large difference between the heart rate means of the covertly presented neutral (.278465) versus the covertly presented death associated word stimuli (1.055285). The large difference between these means may be an indication of a difference in the response of the subjects to the covert presentation of neutral versus the death-associated word stimuli. If the death stimuli had produced a larger effect size or if a larger number of subjects were used in the study, then this difference in means might have reached significance at the .05 level.

Since there was a large difference in the means of the neutral versus the death stimuli when presented covertly, the more logical explanation for the lack of significance in the present study probably relates to the lack of strength of the death word stimuli. Significant results may be obtained if the study is replicated with 123 subjects, on the assumption that the effect size was small effect. A sample size of 123 subjects would have the same statistical power (.60), assuming a small effect size, as an assumption of a medium effect size with 44 subjects. Likewise, more potent, arousing death stimuli, such as pictures or personalized death images, could be used with the same number of subjects to test the effect of the medium effect assumption on the outcome of the present study. If the study is to be replicated, a combination of more potent arousing death stimuli and a greater number of subjects would offer the greatest probability of significant results.

Question 4. Is there a significant difference in response scores on a general anxiety self-report measure of student nurses to death word stimuli presented below their recognition threshold as contrasted with death words presented above their recognition threshold? The difference between the response of the dependent variable NETSA to overt and covert presentation of death word stimuli was not significant, although the triple interaction of mode of presentation, by word type and order of presentation, was significant. The following are possible explanations for the lack of significance of NETSA by the mode of presentation.

1. The State Anxiety Scale as a general anxiety measure is not responsive to anxiety arising out of death fears

2. The covert death associated word stimuli did not generate an increased level of death anxiety

3. The covert death associated word stimuli did not produce a level of emotional response necessary to influence significantly the scores on the State Anxiety Scale.

Explanation 1, which states that the State Anxiety Scale as a general anxiety measure is not responsive to anxiety arising out of death fears, is inconsistent with a large study by Abdel and Ahmed (1986) involving 1443 Egyptian undergraduates. This study was based on a much different population than the present study, and consequently the results may not be valid for the student nurses in the present study. Data on the use of the STAI in the literature as a

state measure of death anxiety is limited. The practical need for a valid and accepted measure of state anxiety and the lack of proven measures of state measures specifically related to death anxiety influenced the selection of the STAI as the state measure for the present study. Although outcome studies of death anxiety have indicated the need for a state measure, the literature provides very little data on the validity of state measures of death anxiety.

Explanation 2, which states that the covert death associated word stimuli did not generate an increased level of death anxiety, is inconsistent with a significant finding of the present study. The table of results of ANOVA of State Anxiety Scale scores (Table 4) indicates a significant (F = 4.27206, p = .045) interaction of within-subject NETSA With both covert and overt order of presentation of neutral and death-associated stimuli. When the State Anxiety Scale score means were plotted on a graph (see Figure 1 in Chapter 4) the mean state anxiety score for death/neutral (order 2) neutral stimuli presented covertly was higher than the mean state anxiety score for death/neutral (order 2) neutral stimuli presently overtly. The descending line which resulted from a plot of these means was almost exactly the reverse of the plot line of the other means scores, which increased from covert to overt presentation of neutral stimuli. The increase in mean scores on the State Anxiety Scale from covert to overt presentation of stimuli would be consistent with the

characteristics of a self-report inventory. The most logical explanation of the deviation from the other lines of the death/neutral (order 2) presentation of neutral stimuli is that the subjects'anxiety reaction to the presentation of covert death words just prior to the presentation of neutral stimuli was still operative at the time the subject completed the state anxiety measure following presentation of neutral stimuli. The continuing influence of the covert presentation of death words may account for the higher mean State Anxiety Scale scores than would otherwise have been the case. This higher state anxiety score following the covert death/neutral (order 2) presentation of neutral stimuli may account for the reverse direction of the line descending from covert to the overt presentation of stimuli. Consequently, the influence of covert death stimuli on the State Anxiety Scale score following the presentation of neutral stimuli provides some support for the notion that the state scale of the STAI may be useful to measure change in the momentary level of covert death anxiety.

Explanation 3, which states that the covert death associated word stimuli did not produce the level of emotional response necessary to influence significantly the scores on the State Anxiety Scale, appears to be the most logical reason for the lack of significant differences in the response to overt versus covert presentation of death associated word stimuli. The lack of potency of the death word stimuli as the

most logical reason for the lack of significance for the NETSA to differentiate between the overt versus the covert presentation of stimuli is consistent with the most logical reason for the lack of significance of the NETHR to differentiate between the overt versus the covert presentation of stimuli. The study could be replicated with more subjects and stronger death stimuli in order to test this explanation.

Question 5. Are self-report trait measures of death anxiety valid indicators of the level of covert physiological response in student nurses?

The correlation coefficient of the Templer Death Anxiety Scale scores with the within subject heart rate change was not significant. A possible explanation for the lack of correlation of the Templer Death Anxiety Scale scores to the within-subject NETHR was the inability of the physiological measure to significantly differentiate the response to the presentation of the neutral and the death-associated stimuli. This explanation could be tested by replicating the present study with more subjects and more potent death stimuli in order to develop more significant differences with which to correlate the Templer Death Anxiety Scale scores.

Recommendations for Future Research

As noted above, analysis of the data indicates that the most logical explanation for the acceptance of the null hypothesis was the lack of potency of the death-associated word stimuli and/or the sample size of the study. Thus, if

the study is replicated, increased potency of the death associated stimuli and/or a larger sample size would probably be required. The use of pictures or personalized death imagery may have a greater emotional content than the death words used in the present study. The use of these more potent stimuli would, of course, have to be tempered by ethical considerations.

The results of the present study suggest the possibility that mean heart rate change may not be sufficiently responsive to death-associated word stimuli to be utilized as a physiological measure in death anxiety research. Thus future research needs to correlate different physiological measures such as GSR, with heart rate change and other physiological measurements in order to find the specific physiological measurement which tracks changes in death anxiety levels. Since the level of the state anxiety scores were dependent on the potency of the death associated word stimuli, the above recommendations to employ more potent death stimuli would also be applicable to the evaluation of the State Anxiety Scale as a death anxiety state measure.

APPENDIX A.

CONSENT FORM

CONSENT FORM

The purpose of this study is to evaluate a psychometric and physiological procedure for measuring the response of student nurses to selected words for utilization by nursing faculty in the education of nursing students. The study will consist of the administration of two self-report psychometric instruments and the administration of common words which may be either above or below your visual recognition threshold. Your physiological response to these words will be measured with a sensor attached to your finger.

It is anticipated that your participation in this study will take approximately twenty minutes. Immediately following the last self-report test you will be debriefed and provided with the specific words used in your portion of the study.

The words presented in the study are words in common usage which you will frequently encounter in the nursing program and in your professional duties. In fact, these words are frequently encountered in the newspaper or in conversations for most individuals in our society. Accordingly, the possibility of any aversive effects are minimal although you may experience a slight momentary discomfort when emotionally loaded words are presented similar to the discomfort you experience when you see these words in other contexts.

Your participation in this study is voluntary and precautions to insure complete confidentiality will be taken. The instruments used in this study are coded by number, not by name. The list matching names and numbers will be viewed only by the researcher and his faculty advisor. The list will be destroyed as soon as all data is coded for analysis. There will be only group analyses of the data and individual results will not be available except with your written permission. At the conclusion of the study a copy of the results will be available in the office of Fran Stanley, Nursing Program Head at J. Sargent Reynolds Community College, Downtown Campus, Richmond, Va.

You have the option to leave the experiment at any time with no questions asked. Additionally, you will have the option to decline to respond to any or all questions. Any refusal to participate will not result in penalty, bias, or loss of any benefits.

Your participation in this study is strictly voluntary and results will be reported anonymously. Please sign below to indicate your consent to participate in this study. If you have any questions , please contact the researcher (collect): John L Weeks, 3803 Timber Ridge Rd, Midlothian, Va. 23112; (804) 744-2708 or Dr. Fred L. Adair, Professor, School of Education, College of William and Mary, Williamsburg Va. 23185; (804) 253 4434.

For purposes of this study please provide the following information:

Name:_____

Telephone Number..Home_____Work_____

Your age_____. Your Sex..... Female_____. Male_____.

I am willing to participate in the study. I understand that my participation is voluntary and that precautions to protect confidentiality will be taken.

Signature: _____

Date : _____

Witness : _____

Form #_____.

Subject #_____.

APPENDIX B.

MICRO EXPERIMENTAL LABORATORY--SOFTWARE SPECIFICATIONS

COMPUTER SCREEN PRINTS OF PROGRAM COMMANDS

USED IN THE STUDY

Test 1a

Covert neutral stimuli followed by covert death stimuli

Forms. The following forms and commands displayed on the comupter screen prints in the subsequent pages were utilized to administer test 1a on the computer.

(a) Experimental specifications #1.

(b) Blocks specifications #1.

(c) Blocks specifications #2.

(d) Blocks specifications #3.

(c) Blocks specifications #4.

(d) Trials specifications #1.

(e) Trials specifications #2.

(f) Questions specifications #1.

(g) Questions specifications #2.

(h) Frame specifications #1.

(i) Frame specifications #2.

(j) Frame specifications #3.

(k) Frame specifications #4.

(l) Frame specifications #5.

(m) Frame specifications #6.

(n) Insert Specifications #1.

(o) Insert Specifications #2.

(p) Insert specifications #3.

(q) Insert specifications #4

```
U   2M 9MMMMMMMMMM{}MMMMMMMEXPERIMENT SPECIFICATIONS #1  M1a.frmMMMMMMMMMMMMM
3AUTHOR Weeks                CREATION DATE 09-07-89 LAST UPDATE 01-10-90
3FILES:    EXP 1a        DATA 1a        INSERT 1a        INCLUDE
3BACKUP DISK VOLUME                     DEBUG normal        SPARE
3ABSTRACT Covert N>D test,State Anxiety Inventory and DAS questionnaire.
3
3
3
3NAMES OF: BLOCK INDEPENDENT VARS   1:         2:         3:         4:
3 (to be logged for later analysis) 5:         6:         7:         8:
3          BLOCK DEPENDENT VARIABLES 1:        2:         3:         4:
3 (logs as ACcuracy,SElection, RT)  5:         6:         7:         8:
3        TRIAL INDEPENDENT VARIABLES 1:        2:         3:         4:
3 (to be logged for later analysis) 5:         6:         7:         8:
3        TRIAL DEPENDENT VARIABLES   1:        2:         3:         4:
3 (logs as ACcuracy,SElection, RT)  5:         6:         7:         8:
3EVENT   TYPE  FORM ID       COMMENT                MISC. INSERT FIELD
3  1  frame    1        orientation to block 3
3  2  block    3        covert neutral test
3  3  block    1        STAI questionnaire
3  4  frame    1        orientation to block 4
3  5  block    4        covert death test
3  6  block    1        STAI questionnaire
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form


U  45M 7MMMMMMMMMM{}MMMMMMMEXPERIMENT SPECIFICATIONS #1  M1a.frmMMMMMMMMMMMMM
3  7  block    2        DAS questionnaire
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
3 17
3 18
3 19
3 20
3 21
3 22
3 23
3 24
3 25
3 26
3 27
3 28
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM{}MMMMMMM  BLOCKS SPECIFICATIONS   #1  M1a.frmMMMMMMMMMMMMM
3COMMENT Block for prsentation of STAI questionnaire
3BLOCK INSERTS                SEQUENCE fixed    NUMBER OF BLOCKS 1
3VALUES OF BLOCK INDEPENDENT VARS  1:          2:          3:          4:
3 (to be logged for later analysis)5:          6:          7:          8:
3EVENT  TYPE   FORM ID        COMMENT                    MISC. INSERT FIELD
3  1  question 1       STAI questionnaire
3  2
3  3
3  4
3  5
3  6
3  7
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
3 17
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM()MMMMMMM  BLOCKS SPECIFICATIONS   #2  M1a.frmMMMMMMMMMMMMM
3COMMENT Block for prsentation of DAS questionnaire
3BLOCK INSERTS                SEQUENCE fixed     NUMBER OF BLOCKS 1
3VALUES OF BLOCK INDEPENDENT VARS  1:          2:          3:          4:
3 (to be logged for later analysis)5:          6:          7:          8:
3EVENT   TYPE    FORM ID        COMMENT                    MISC. INSERT FIELD
3  1  question 2        DAS questionnaire
3  2
3  3
3  4
3  5
3  6
3  7
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
3 17
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM()MMMMMMM  BLOCKS SPECIFICATIONS   #3  M1a.frmMMMMMMMMMMMMM
3COMMENT Present one block of subliminal neutral words
3BLOCK INSERTS                SEQUENCE fixed     NUMBER OF BLOCKS 1
3VALUES OF BLOCK INDEPENDENT VARS  1:          2:          3:          4:
3 (to be logged for later analysis)5:          6:          7:          8:
3EVENT   TYPE    FORM ID        COMMENT                    MISC. INSERT FIELD
3  1  trial    1        40 trials sub neutral wd
3  2
3  3
3  4
3  5
3  6
3  7
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
3 17
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM{}MMMMMMM  BLOCKS SPECIFICATIONS   #4  M1a.frmMMMMMMMMMMMMM
3COMMENT Present one block of subliminal death words
3BLOCK INSERTS              SEQUENCE fixed    NUMBER OF BLOCKS 1
3VALUES OF BLOCK INDEPENDENT VARS  1:         2:          3:          4:
3 (to be logged for later analysis)5:         6:          7:          8:
3EVENT  TYPE    FORM ID        COMMENT                   MISC. INSERT FIELD
3  1  trial    2       40 trials sub death wd
3  2
3  3
3  4
3  5
3  6
3  7
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
3 17
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM{}MMMMMMM  TRIALS SPECIFICATIONS   #1  M1a.frmMMMMMMMMMMMMM
3COMMENT Present 40 trials of subliminal neutral words
3TRIAL INSERTS 3            SEQUENCE random   NUMBER OF TRIALS 40
3VALUES OF TRIAL INDEPENDENT VARS  1:         2:          3:          4:
3TO BE LOGGED FOR LATER ANALYSIS   5:         6:          7:          8:
3RERUN ERROR TRIALS no
3EVENT  TYPE    FORM ID        COMMENT                   MISC. INSERT FIELD
3  1  frame    2        + GET READY
3  2  frame    5       Blank delay
3  3  frame    3       present neutral stimuli
3  4  frame    4       mask
3  5
3  6
3  7
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM()MMMMMM  TRIALS SPECIFICATIONS   #2  M1a.frmMMMMMMMMMMMMM
3COMMENT Present 40 trials of subliminal death words
3TRIAL INSERTS 4              SEQUENCE random   NUMBER OF TRIALS 40
3VALUES OF TRIAL INDEPENDENT VARS  1:          2:          3:          4:
3TO BE LOGGED FOR LATER ANALYSIS   5:          6:          7:          8:
3RERUN ERROR TRIALS no
3EVENT  TYPE    FORM ID       COMMENT                  MISC. INSERT FIELD
3  1  frame    2          + GET READY
3  2  frame    5         Blank delay
3  3  frame    6         present death stimuli
3  4  frame    4         mask
3  5
3  6
3  7
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM()MMMMMMQUESTIONS SPECIFICATIONS  #1  M1a.frmMMMMMMMMMMMMM
3COMMENT STAI Questionnaire
3QUESTION INSERT 1         SEQUENCE fixed   NUMBER OF QUESTIONS 20
3VALUES OF TRIAL INDEPENDENT VARS 1          2          3          4
3 QTIME,QSCORE, etc. also logged  5          6          7          8
3QUESTIONNAIRE OPTIONS qhnz                                   MAX TIME 30000
3SPECIFIC QUESTION OPTIONS c %1                               LABEL stimulus
3INSTRUCTIONSThe following are a number of statements which people have used
3to describe themselves. Read each statement and then indicate how you feel
3RIGHT NOW, that is, AT THIS MOMENT. There are not right or wrong answers.
3Just give the answer which seem to describe your PRESENT feelings best.
3QUESTION {Q1}
3
3
3
3
3
3ALTERNATIVES {Q2}
3
3
3
3ANSWER
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMMM()MMMMMMMQUESTIONS SPECIFICATIONS  #2  M1a.frmMMMMMMMMMMMMM
3COMMENT DAS Questionnaire
3QUESTION INSERT 2        SEQUENCE fixed   NUMBER OF QUESTIONS 15
3VALUES OF TRIAL INDEPENDENT VARS 1          2          3          4
3 QTIME,QSCORE, etc. also logged  5          6          7          8
3QUESTIONNAIRE OPTIONS qhng                                  MAX TIME 30000
3SPECIFIC QUESTION OPTIONS c %1                              LABEL stimulus
3INSTRUCTIONS Please answer the following 15 questions. If a statement
3is true or mostly true as applied to you, then please answer true. If a
3statement is false or mostly false as applied to you please answer false.
3
3QUESTION (Q1)
3
3
3
3
3
3ALTERNATIVES (Q2)
3
3
3
3ANSWER 1
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form



U   2M10MMMMMMMMMMM()MMMMMMM  FRAME SPECIFICATIONS    #1  M1a.frmMMMMMMMMMMMMM
3COMMENT Block 3 orientation
3FRAME INSERT          SEQUENCE none        START LINE 5       ERASE yes
3FOREGROUND COLOR white      BACKGROUND black  CENTER yes      DURATION response
3DISPLAY TYPE normal
3INPUT MODE key    LENGTH/PORT #           INDEX ANSWER no TERMINATE response
3RESPONSE  ' '                             ANSWER  ' '
3FEEDBACK delay                            LOG DEPENDENT VARIABLE none
3TEXT begins on next line and is continued on page 2
3This part of the study will present you with some words, which in some cases,
3may be difficult to recognize because of the speed of the presentation.
3Your task is to read the word which will be presented in the area
3where you see the + sign.
3
3HIT THE SPACE BAR WHEN YOU ARE READY TO BEGIN
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMMM{}MMMMMMM  FRAME SPECIFICATIONS     #2  M1a.frmMMMMMMMMMMMMM
3COMMENT GET READY FOR SUBLIMINAL stimuli
3FRAME INSERT          SEQUENCE random      START LINE 13       ERASE yes
3FOREGROUND COLOR white      BACKGROUND black  CENTER yes      DURATION 2000
3DISPLAY TYPE waittop
3INPUT MODE none    LENGTH/PORT #           INDEX ANSWER no TERMINATE timeout
3RESPONSE none                              ANSWER none
3FEEDBACK none                              LOG DEPENDENT VARIABLE none
3TEXT begins on next line and is continued on page 2
3+
3
3
3
3
3
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMMM{}MMMMMMM  FRAME SPECIFICATIONS     #3  M1a.frmMMMMMMMMMMMMM
3COMMENT Present stimuli for subliminal neutral words
3FRAME INSERT 3        SEQUENCE random      START LINE 13       ERASE yes
3FOREGROUND COLOR white      BACKGROUND black  CENTER yes      DURATION 16
3DISPLAY TYPE waittop+flashup
3INPUT MODE none    LENGTH/PORT #           INDEX ANSWER no TERMINATE timeout
3RESPONSE none                              ANSWER none
3FEEDBACK none                              LOG DEPENDENT VARIABLE none
3TEXT begins on next line and is continued on page 2
3{T1}
3
3
3
3
3
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMMM()MMMMMMM  FRAME SPECIFICATIONS    #4  M1a.frmMMMMMMMMMMMMM
3COMMENT Subliminal mask
3FRAME INSERT          SEQUENCE random      START LINE 13       ERASE no
3FOREGROUND COLOR white      BACKGROUND black  CENTER yes      DURATION 800
3DISPLAY TYPE waittop
3INPUT MODE no      LENGTH/PORT #           INDEX ANSWER no TERMINATE timeout
3RESPONSE none                              ANSWER none
3FEEDBACK none                              LOG DEPENDENT VARIABLE none
3TEXT begins on next line and is continued on page 2
3\\\\\+\\\\\
3
3
3
3
3
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMMM()MMMMMMM  FRAME SPECIFICATIONS    #5  M1a.frmMMMMMMMMMMMMM
3COMMENT Blank delay
3FRAME INSERT          SEQUENCE random      START LINE 13       ERASE no
3FOREGROUND COLOR white      BACKGROUND black  CENTER yes      DURATION 50
3DISPLAY TYPE normal
3INPUT MODE no      LENGTH/PORT #           INDEX ANSWER no TERMINATE timeout
3RESPONSE none                              ANSWER none
3FEEDBACK none                              LOG DEPENDENT VARIABLE none
3TEXT begins on next line and is continued on page 2
3
3
3
3
3
3
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM{}MMMMMMM  FRAME SPECIFICATIONS    #6  Mla.frmMMMMMMMMMMMMM
3COMMENT Present stimuli for subliminal death words
3FRAME INSERT 4       SEQUENCE random      START LINE 13      ERASE yes
3FOREGROUND COLOR white      BACKGROUND black  CENTER yes     DURATION 16
3DISPLAY TYPE waittop+flashup
3INPUT MODE none   LENGTH/PORT #           INDEX ANSWER no TERMINATE timeout
3RESPONSE none                             ANSWER none
3FEEDBACK none                             LOG DEPENDENT VARIABLE none
3TEXT begins on next line and is continued on page 2
3{T1}
3
3
3
3
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM{}MMMMMMM  INSERT SPECIFICATIONS   #1  Mla.frmMMMMMMMMMMMMM
3COMMENT Insert for STAI questions
3 Enter inserts, use a "\" to delimit each slot of the insert.
3I feel calm.\VERY MUCH SO^MODERATELY SO^SOMEWHAT^NOT AT ALL
3I feel secure.\VERY MUCH SO^MODERATELY SO^SOMEWHAT^NOT AT ALL
3I am tense.\NOT AT ALL^SOMEWHAT^MODERATELY^VERY MUCH SO
3I feel strained.\NOT AT ALL^SOMEWHAT^MODERATELY^VERY MUCH SO
3I feel at ease.\VERY MUCH SO^MODERATELY SO^SOMEWHAT^NOT AT ALL
3I feel upset.\NOT AT ALL^SOMEWHAT^MODERATELY SO^VERY MUCH SO
3"I am presently worring over possible misfortunes.\NOT AT ALL^SOMEWHAT
3^MODERATELY SO^VERY MUCH SO"
3I feel satisfied.\VERY MUCH SO^MODERATELY SO^SOMEWHAT^NOT AT ALL
3I feel frightened.\NOT AT ALL^SOMEWHAT^MODERATELY SO^VERY MUCH SO
3I feel comfortable.\VERY MUCH SO^MODERATELY SO^SOMEWHAT^NOT AT ALL
3I feel self-cofident.\VERY MUCH SO^MODERATELY SO^SOMEWHAT^NOT AT ALL
3I feel nervous.\NOT AT ALL^SOMEWHAT^MODERATELY SO^VERY MUCH SO
3I am jittery.\NOT AT ALL^SOMEWHAT^MODERATELY SO^VERY MUCH SO
3I feel indecisive.\NOT AT ALL^SOMEWHAT^MODERATELY SO^VERY MUCH SO
3I am relaxed.\VERY MUCH SO^MODRATELY SO^SOMEWHAT^NOT AT ALL
3I feel content.\VERY MUCH SO^MODERATELY SO^SOMEWHAT^NOT AT ALL
3I am worried.\NOT AT ALL^SOMEWHAT^MODERATELY SO^VERY MUCH SO
3I feel confused.\NOT AT ALL^SOMEWHAT^MODERAELY SO^VERY MUCH SO
3I feel steady.\VERY MUCH SO^MODERATELY SO^SOMEWHAT^NOT AT ALL
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U  45M 2MMMMMMMMMM{}MMMMMMM  INSERT SPECIFICATIONS   #1  Mla.frmMMMMMMMMMMMMM
3I feel pleasant.\VERY MUCH SO^MODERATELY SO^SOMEWHAT^NOT AT ALL
3
3
```

```
U   2M10MMMMMMMMMMM()MMMMMMM  INSERT SPECIFICATIONS   #2  M1a.fraMMMMMMMMMMMMM
3COMMENT Insert for STAI questions
3 Enter inserts, use a "\" to delimit each slot of the insert.
3I am very much afraid to die.\TRUE^FALSE
3The thought of death seldom enters my mind.\FALSE^TRUE
3It does not make me nervous when people talk about death.\FALSE^TRUE
3I dread to think about having to have an operation.\TRUE^FALSE
3I am not at all afraid to die.\FALSE^TRUE
3I am not particulaly afraid of getting cancer.\FALSE^TRUE
3The thought of death never bothers me.\FALSE^TRUE
3I am often distressed by the way time flies so very rapidly.\TRUE^FALSE
3I fear dying a painful death.\TRUE^FALSE
3The subject of life after death troubles me greatly.\TRUE^FALSE
3I am really scared of having a heart attack.\TRUE^FALSE
3I often think about how short life really is.\TRUE^FALSE
3I shudder when I hear people talking about a World War III.\TRUE^FALSE
3The sight of a dead body is horrifying to me.\TRUE^FALSE
3I feel that the future holds nothing for me to fear.\FALSE^TRUE
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMMM()MMMMMMM  INSERT SPECIFICATIONS   #3  M1a.fraMMMMMMMMMMMMM
3COMMENT Insert for NEUTRAL WORDS STIM
3 Enter inserts, use a "\" to delimit each slot of the insert.
3HAT
3LAMP
3BOOK
3PAPER
3TRUNK
3RUG
3CHAIR
3HORSE
3SPRING
3WATER
3
3
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMMM[}MMMMMMM  INSERT SPECIFICATIONS   #4  M1a.frmMMMMMMMMMMMMM
3COMMENT Insert for DEATH WORDS  STIMULI
3 Enter inserts, use a "\" to delimit each slot of the insert.
3FUNERAL
3DEATH
3BURIAL
3SUICIDE
3MURDER
3CASKET
3CANCER
3CEMETERY
3ETERNITY
3CORPSE
3
3
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

COMPUTER SCREEN PRINTS OF PROGRAM COMMANDS

USED IN THE STUDY

Test 1b

Covert death stimuli followed by covert neutral stimuli

Forms. The following forms and commands displayed on the comupter screen prints in the subsequent pages were utilized to administer test 1a on the computer.

(a) Experimental specifications #1.

(b) Blocks specifications #1. See test 1a..same commands.

(c) Blocks specifications #2. See test 1a..same commands.

(d) Blocks specifications #3. See test 1a..same commands.

(c) Blocks specifications #4 See test 1a..same commands.

(d) Trials specifications #1. See test 1a..same commands.

(e) Trials specifications #2. See test 1a..same commands.

(f) Questions specifications #1. See test 1a..same commands.

(g) Questions specifications #2. See test 1a..same commands.

(h) Frame specifications #1. See test 1a..same commands.

(i) Frame specifications #2. See test 1a..same commands.

(j) Frame specifications #3. See test 1a..same commands.

(k) Frame specifications #4. See test 1a..same commands.

(l) Frame specifications #5. See test 1a..same commands.

(m) Frame specifications #6. See test 1a..same commands.

(n) Insert Specifications #1. See test 1a..same commands.

(o) Insert Specifications #2. See test 1a..same commands.

(p) Insert specifications #3. See test 1a..same commands.

(q) Insert specifications #4 See test 1a..same commands.

```
U  13M39MMMMMMMMMM{}MMMMMMMEXPERIMENT SPECIFICATIONS #1  M1b.frmMMMMMMMMMMMMM
JAUTHOR Weeks                CREATION DATE 09-07-89 LAST UPDATE 01-10-90
JFILES:    EXP 1b        DATA 1b         INSERT 1b         INCLUDE
JBACKUP DISK VOLUME                      DEBUG normal         SPARE
JABSTRACT Covert D>N test,State Anxiety Inventory and DAS questionnaire.
J
J
J
JNAMES OF: BLOCK INDEPENDENT VARS   1:          2:          3:          4:
J (to be logged for later analysis) 5:          6:          7:          8:
J         BLOCK DEPENDENT VARIABLES 1:          2:          3:          4:
J (logs as ACcuracy,SElection, RT)  5:          6:          7:          8:
J       TRIAL INDEPENDENT VARIABLES 1:          2:          3:          4:
J (to be logged for later analysis) 5:          6:          7:          8:
J       TRIAL DEPENDENT VARIABLES   1:          2:          3:          4:
J (logs as ACcuracy,SElection, RT)  5:          6:          7:          8:
JEVENT   TYPE  FORM ID       COMMENT                  MISC. INSERT FIELD
J  1  frame    1        orientation to block 3
J  2  block    4        covert death test
J  3  block    1        STAI questionnaire
J  4  frame    1        orientation to block 4
J  5  block    3        covert neutral test
J  6  block    1        STAI questionnaire
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form


U  45M 7MMMMMMMMMMM{}MMMMMMMEXPERIMENT SPECIFICATIONS #1  M1b.frmMMMMMMMMMMMMM
J  7  block    2        DAS questionnaire
J  8
J  9
J 10
J 11
J 12
J 13
J 14
J 15
J 16
J 17
J 18
J 19
J 20
J 21
J 22
J 23
J 24
J 25
J 26
J 27
J 28
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

COMPUTER SCREEN PRINTS OF PROGRAM COMMANDS USED IN THE STUDY

Test 2a

Overt neutral stimuli followed by overt death stimuli

Forms. The following forms and commands displayed on the comupter screen prints in the subsequent pages were utilized to administer test 1a on the computer.

(a) Experimental specifications #1.

(b) Blocks specifications #1. See test 1a..same commands.

(c) Blocks specifications #2. See test 1a..same commands.

(d) Blocks specifications #3.

(c) Blocks specifications #4

(d) Trials specifications #1.

(e) Trials specifications #2.

(f) Questions specifications #1. See test 1a..same commands.

(g) Questions specifications #2. See test 1a..same commands.

(h) Frame specifications #1. See test 1a..same commands.

(i) Frame specifications #2.

(j) Frame specifications #3.

(k) Frame specifications #4. See test 1a..same commands.

(l) Frame specifications #5. See test 1a..same commands.

(m) Frame specifications #6.

(n) Insert Specifications #1. See test 1a..same commands.

(o) Insert Specifications #2. See test 1a..same commands.

(p) Insert specifications #3. See test 1a..same commands.

(q) Insert specifications #4 See test 1a..same commands.

```
U   2M 9MMMMMMMMMM{}MMMMMMMEXPERIMENT SPECIFICATIONS #1  M2a.frmMMMMMMMMMMMMM
3AUTHOR Weeks                CREATION DATE 09-07-89 LAST UPDATE 01-10-90
3FILES:    EXP 2a       DATA 2a         INSERT 2a         INCLUDE
3BACKUP DISK VOLUME                     DEBUG normal         SPARE
3ABSTRACT Overt N>D test,State Anxiety Inventory and DAS questionnaire.
3
3
3
3NAMES OF: BLOCK INDEPENDENT VARS   1:          2:          3:          4:
3 (to be logged for later analysis) 5:          6:          7:          8:
3          BLOCK DEPENDENT VARIABLES 1:         2:          3:          4:
3 (logs as ACcuracy,SElection, RT)  5:          6:          7:          8:
3        TRIAL INDEPENDENT VARIABLES 1:         2:          3:          4:
3 (to be logged for later analysis) 5:          6:          7:          8:
3        TRIAL DEPENDENT VARIABLES   1:         2:          3:          4:
3 (logs as ACcuracy,SElection, RT)  5:          6:          7:          8:
3EVENT   TYPE  FORM ID       COMMENT                  MISC. INSERT FIELD
3  1  frame    1        orientation to block 3
3  2  block    3        overt neutral test
3  3  block    1        STAI questionnaire
3  4  frame    1        orientation to block 4
3  5  block    4        overt death test
3  6  block    1        STAI questionnaire
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   45M 7MMMMMMMMMM{}MMMMMMMEXPERIMENT SPECIFICATIONS #1  M2a.frmMMMMMMMMMMMMM
3  7  block    2        DAS questionnaire
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
3 17
3 18
3 19
3 20
3 21
3 22
3 23
3 24
3 25
3 26
3 27
3 28
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMMM()MMMMMMM  BLOCKS SPECIFICATIONS   #3  M2a.frmMMMMMMMMMMMMMM
3COMMENT Present one block of supraliminal neutral words
3BLOCK INSERTS                SEQUENCE fixed    NUMBER OF BLOCKS 1
3VALUES OF BLOCK INDEPENDENT VARS  1:         2:         3:         4:
3 (to be logged for later analysis)5:         6:         7:         8:
3EVENT  TYPE    FORM ID        COMMENT                  MISC. INSERT FIELD
3  1  trial    1       40 trials supra neut wd
3  2
3  3
3  4
3  5
3  6
3  7
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
3 17
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMMM[]MMMMMMM  BLOCKS SPECIFICATIONS   #4  M2a.frmMMMMMMMMMMMMM
JCOMMENT Present one block of supra death words
JBLOCK INSERTS                SEQUENCE fixed    NUMBER OF BLOCKS 1
JVALUES OF BLOCK INDEPENDENT VARS  1:         2:         3:         4:
J (to be logged for later analysis)5:         6:         7:         8:
JEVENT  TYPE    FORM ID        COMMENT                    MISC. INSERT FIELD
J  1  trial     2       40 trials supra death wd
J  2
J  3
J  4
J  5
J  6
J  7
J  8
J  9
J 10
J 11
J 12
J 13
J 14
J 15
J 16
J 17
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMMM[]MMMMMMM  TRIALS SPECIFICATIONS   #1  M2a.frmMMMMMMMMMMMMM
JCOMMENT Present 40 trials of supraliminal neutral words
JTRIAL INSERTS 3              SEQUENCE random   NUMBER OF TRIALS 40
JVALUES OF TRIAL INDEPENDENT VARS  1:         2:         3:         4:
JTO BE LOGGED FOR LATER ANALYSIS   5:         6:         7:         8:
JRERUN ERROR TRIALS no
JEVENT  TYPE    FORM ID        COMMENT                  MISC. INSERT FIELD
J  1  frame     2         + GET READY
J  2  frame     3        present neutral stimuli
J  3
J  4
J  5
J  6
J  7
J  8
J  9
J 10
J 11
J 12
J 13
J 14
J 15
J 16
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M36MMMMMMMMMM(|MMMMMMM  TRIALS SPECIFICATIONS   #2  M2a.fraMMMMMMMMMMMMM
3COMMENT Present 40 trials of supraliminal death words
3TRIAL INSERTS 4              SEQUENCE random   NUMBER OF TRIALS 40
3VALUES OF TRIAL INDEPENDENT VARS  1:          2:          3:          4:
3TO BE LOGGED FOR LATER ANALYSIS   5:          6:          7:          8:
3RERUN ERROR TRIALS no
3EVENT  TYPE    FORM ID       COMMENT                    MISC. INSERT FIELD
3  1  frame     2         + GET READY
3  2  frame     6        present death stimuli
3  3
3  4
3  5
3  6
3  7
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM%{}MMMMMMM  FRAME SPECIFICATIONS    #2  M2a.frmMMMMMMMMMMMMM
3COMMENT GET READY FOR SUPRALIMINAL stimuli
3FRAME INSERT          SEQUENCE random      START LINE 13       ERASE yes
3FOREGROUND COLOR white      BACKGROUND black  CENTER yes      DURATION 1900
3DISPLAY TYPE waittop
3INPUT MODE none    LENGTH/PORT #           INDEX ANSWER no TERMINATE timeout
3RESPONSE none                              ANSWER none
3FEEDBACK none                              LOG DEPENDENT VARIABLE none
3TEXT begins on next line and is continued on page 2
3+
3
3
3
3
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM${}MMMMMMM  FRAME SPECIFICATIONS     #3  M2a.frmMMMMMMMMMMMMM
3COMMENT Present stimuli for supraliminal neutral words
3FRAME INSERT 3        SEQUENCE random      START LINE 13       ERASE yes
3FOREGROUND COLOR white      BACKGROUND black  CENTER yes      DURATION 1000
3DISPLAY TYPE waittop+flashup
3INPUT MODE none    LENGTH/PORT #           INDEX ANSWER no TERMINATE timeout
3RESPONSE none                              ANSWER none
3FEEDBACK none                              LOG DEPENDENT VARIABLE none
3TEXT begins on next line and is continued on page 2
3{T1}
3
3
3
3
3
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

```
U   2M10MMMMMMMMMM${}MMMMMMM  FRAME SPECIFICATIONS     #6  M2a.frmMMMMMMMMMMMMM
3COMMENT Present stimuli for supraliminal death words
3FRAME INSERT 4        SEQUENCE random      START LINE 13       ERASE yes
3FOREGROUND COLOR white      BACKGROUND black  CENTER yes      DURATION 1000
3DISPLAY TYPE waittop+flashup
3INPUT MODE none    LENGTH/PORT #           INDEX ANSWER no TERMINATE timeout
3RESPONSE none                              ANSWER none
3FEEDBACK none                              LOG DEPENDENT VARIABLE none
3TEXT begins on next line and is continued on page 2
3{T1}
3
3
3
3
3
3
3
3
3
3
3
3
3
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

COMPUTER SCREEN PRINTS OF PROGRAM COMMANDS

USED IN THE STUDY

Test 2b

Overt death stimuli followed by overt neutral stimuli

Forms. The following forms and commands displayed on the comupter screen prints in the subsequent pages were utilized to administer test 1a on the computer.

(a) Experimental specifications #1.

(b) Blocks specifications #1. See test 1a..same commands.

(c) Blocks specifications #2. See test 1a..same commands.

(d) Blocks specifications #3. See test 2a..same commands.

(c) Blocks specifications #4 See test 2a..same commands.

(d) Trials specifications #1. See test 2a..same commands.

(e) Trials specifications #2. See test 2a..same commands.

(f) Questions specifications #1. See test 1a..same commands.

(g) Questions specifications #2. See test 1a..same commands.

(h) Frame specifications #1. See test 1a..same commands.

(i) Frame specifications #2. See test 2a..same commands.

(j) Frame specifications #3. See test 2a..same commands.

(k) Frame specifications #4. See test 1a..same commands.

(l) Frame specifications #5. See test 1a..same commands.

(m) Frame specifications #6. See test 2a..same commands.

(n) Insert Specifications #1. See test 1a..same commands.

(o) Insert Specifications #2. See test 1a..same commands.

(p) Insert specifications #3. See test 1a..same commands.

(q) Insert specifications #4 See test 1a..same commands.

```
U  19M12MMMMMMMMMMM()MMMMMMMEXPERIMENT SPECIFICATIONS #1  M2b.frmMMMMMMMMMMMMM
3AUTHOR Weeks                CREATION DATE 09-07-89 LAST UPDATE 01-10-90
3FILES:    EXP 2b        DATA 2b         INSERT 2b         INCLUDE
3BACKUP DISK VOLUME                      DEBUG normal          SPARE
3ABSTRACT Overt D>N test,State Anxiety Inventory and DAS questionnaire.
3
3
3
3NAMES OF: BLOCK INDEPENDENT VARS    1:          2:          3:          4:
3 (to be logged for later analysis) 5:          6:          7:          8:
3          BLOCK DEPENDENT VARIABLES 1:          2:          3:          4:
3 (logs as ACcuracy,SElection, RT)  5:          6:          7:          8:
3        TRIAL INDEPENDENT VARIABLES 1:          2:          3:          4:
3 (to be logged for later analysis) 5:          6:          7:          8:
3        TRIAL DEPENDENT VARIABLES   1:          2:          3:          4:
3 (logs as ACcuracy,SElection, RT)  5:          6:          7:          8:
3EVENT   TYPE  FORM ID       COMMENT                    MISC. INSERT FIELD
3  1  frame    1        orientation to block 3
3  2  block    4        overt death test
3  3  block    1        STAI questionnaire
3  4  frame    1        orientation to block 4
3  5  block    3        overt neutral test
3  6  block    1        STAI questionnaire
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form


U  45M 7MMMMMMMMMMM()MMMMMMMEXPERIMENT SPECIFICATIONS #1  M2b.frmMMMMMMMMMMMMM
3  7  block    2        DAS questionnaire
3  8
3  9
3 10
3 11
3 12
3 13
3 14
3 15
3 16
3 17
3 18
3 19
3 20
3 21
3 22
3 23
3 24
3 25
3 26
3 27
3 28
TMMMMEsc-Quit  F1-Help  F2-Insert  F3-Generate  F4-Save Work  F5-Erase FieldMMM
IN  F6-Add Field  F7-Mark Block  F8-Special Func  F9-Form Func  F10-Goto Form
```

REFERENCES

REFERENCES

Abdel, K., & Ahmed, M. (1986). Death anxiety in Egyptian samples. Personality and Individual Differences, 7(4), 479-483.

Balay, J., & Shevrin, H. (1988). The subliminal psychodynamic activation method: A critical review. Center for Forensic Psychiatry, 43(3), 161-174.

Barton, D., Crowder, M. K., & Flexner, J. M. (1979). Teaching about dying and death in a multidisciplinary student group. Omega, 10(3), 265-270.

Benoliel, J. Q. (1988). Health care providers and dying patients: critical issues in terminal care. Omega, 18(4), 341-361.

Brown, W. P. (1961). Conceptions of perceptual defense. British Journal of Psychology Monograph, (suppl. 35).

Chaklin, W. F. (1984) State-Trait Anxiety Inventory. In D. J. Keyser & R. C. Sweetland (Eds.), Test Critiques (pp. 626-632). Kansas City: Test Corporation of America.

Choron, J. (1964). Modern man and immortality. New York: Macmillan.

Collett, L., & Lester, D. (1969). The fear of death and the fear of dying. Journal of Psychology, 72, 179-181.

Collins, D. R. (1974). A procedure for the utilization of subliminal perception to assess and modify personality. Unpublished doctoral dissertation, College of William and Mary, Williamsburg.

Dauber, R. B. (1984). Subliminal psychodynamic activation in depression: On the role of autonomy issues in depressed college women. Journal of Abnormal Psychology, 93(1),9-18.

Dickstein, L. S. (1978) Attitudes toward death, anxiety and social desirability. Omega, 8(4), 369-377.

Diener, D., & Smee, W. P. (1984). Apple tachistoscope. Behavior Research Methods, Instruments and Computers, 16(6), 540-544.

Durlak, J.' A. (1978). Comparison between experiential and didactic methods of death education. Omega 9(1), 57-65.

Durlak, J. A., & Kass, R. A. (1981). Clarifying the measurement of death attitudes: A factor analytic evaluation of fifteen self-report death scales. Omega, 12 (2), 129-141

Eakes, G. G. (1985). The relationship between death anxiety and attitudes toward the elderly among nursing staff Death Studies, 9, 163-172.

Facts about nursing 1984-85. American Nurses' Association. Kansas City: Missouri.

Feifel, H., & Branscomb, A. (1973). Who's afraid of death? Journal of Abnormal Psychology, 81(3), 282-288.

Feifel, H., Freilich, J., & Hermann, L. (1973). Death fear in dying heart and cancer patients. Journal of Psychosomatic Medicine, 17, 161-166.

Feifel, H., & Herman, L. (1973). Fear of death in the mentally ill. Psychological Reports, 33, 931-938.

Fleming, L. J. (1977). Perceptual defensiveness and death anxiety. Psychological Reports, 41, 391-396.

Gauthier, J., & Marshall, W. L. (1977). The determination of optimal exposure to phobic stimuli in flooding therapy. Behavior Response & Therapy, 15, 403-410.

Geister, C. (1986). The use of subliminal psychodynamic activation in the study of repression. Journal of Personality and Social Psychology, 51(4), 844-851.

Gilliland, J. C., & Templer, D. I. (1986). Relationship of death anxiety scale factors to subjective states. Omega, 16(2), 155-167.

Golding, S. C., Atwood, G. E., & Goldman, G. A. (1966). Anxiety and two cognitive forms of resistance to the idea of death. Psychological Reports, 18, 365-364.

Hayslip, B., Jr., & Bussey, D. S. ((1986). Locus of control levels of death anxiety relationships. Omega, 17(1), 41-49.

Hayslip, B., Jr., & Walling, B. A. (1985). Impact of hospice volunteer training on death anxiety and locus of control. Omega, 16(3), 243-255.

Handal, P. J. (1980). Individual and group problem solving and type of orientation as a function of high, moderate and low death anxiety. Omega, 10(4), 365-376.

Handal, P. J., Peal, R. L., Napoli, J. G., & Austrin, H. R. (1984). The relationship between direct and indirect measures of death anxiety. Omega, 15(3), 245-262.

Handal, P. J., & Rychlak, T. F. (1971). Curvilinearity between dream content and death anxiety and the relationship of death anxiety to repression-sensitization. Journal of Abnormal Psychology, 77(1), 11-16.

Haspel, K. C. (1978). The effects of priming and subliminal oedipal-related stimulation on competitive behavior of college males. Unpublished master's theses, University of Rhode Island.

Haspel, K. C., & Harris, R. S. (1982). Effect of tachistoscopic stimulation of subconscious oedipal wishes on competitive performance: A failure to replicate. Journal of Abnormal Psychology, 91(6), 437-443.

Hodgson, R., Rachman S. (1974). Desynchrony in measures of fear. Behavior Response & Therapy, 12, 319-326.

Hoelter, J. W., & Hoelter, J. A. (1980). On the interrelationships among exposure to death and dying, fear of death, and anxiety. Omega, 11(3), 241-264.

Kastenbaum, R. (1967). The mental life of dying geriatric patients. Gerontologist, 7, 97-100.

Kastenbaum, R., & Aisenberg, I. (1972). The psychology of death. New York: Springer.

Kunzendorf, R. G. (1985). Repressed fear of inexistence and its hypnotic recovery in religious students. Omega,16(1), 23-33.

Lattanner, B. A., & Hayslip, B., Jr. (1984). Occupation related differences in levels of death anxiety. Omega, 15(1), 53-66.

Liberman, M. B., Handal, P. J., Napoli, J. G., & Austrin, H.R. (1983). Development of a behavior rating scale for doctor-patient interactions and its implications for the study of death anxiety. Omega, 14(3), 231-239.

Littlefield, C., & Fleming, S. (1984). Measuring fear of death: A multidimensional approach. Omega, 15(2), 131-137.

Magri, M. B. (1979). Effects of sexual guilt upon affective responses to subliminal sexual stimuli. Unpublished doctoral dissertation, College of William and Mary, Williamsburg.

Mapou, R. L. (1982). Tachistoscopic timing on the TRS-80. Behavior Research Methods and Instrumentation, 14(6), 534-538.

Martin, T. O. (1982) Death anxiety and social desirability among nurses. Omega, 13(1) 51-58.

Meissner, W. (1958). Affective response to psychoanalytic death symbols. Journal of Abnormal and Social Psychology, 56, 295-299.

Murray, P. (1974). Death education and its effect on the death anxiety level of nurses. Psychological Reports 35(3), 1250.

National League for Nursing Data Book. (1978). New York: National League for Nursing Publication No. 19-175.

Palumbu, R., & Gillman, I. (1984). Effects of subliminal activation of oedipal fantasies on competition performance: A reflection and extension. Journal of Nervous and Mental Diseases, 172(12), 737-741.

Pollak, P., M., (1979). Correlation of death anxiety: A review of empirical studies. Omega, 10(2), 97-121.

Robinson, P. J., & Wood, K. (1984). The threat index: An additive approach. Omega, 15,(21), 139-144.

Schneider, W. (1988). Micro experimental laboratory: An integrated system IBM PC compatible. Behavior Research Methods, Instruments & Computers 20(2), 206-217.

Silverman, L. H., (1976) Psychoanalytic theory: The reports of my death are greatly exaggerated. American Psychologist, 31, 621-637.

Silverman, L. H., Lachmann, F. M., Milich, R. H. (1984). In response. International Forum for Psychoanalysis, 1(2), 205-217.

Silverman, L. H. (1985). Comments on three recent subliminal psychodynamic activation investigation. Journal of Abnormal Psychology, 94(4), 647-648.

Silverman, L. H. & Weinberger, J. (1985). Mommy and I are one: Implication for psychotherapy. American Psychologist, 40(12) 1296-1308.

Spielberger, C. C., Gorsuch, R. L., Lushene, R. J., Vagg, P. R., & Jacobs, G. A. (1983). Manual for the State-Trait Anxiety Inventory-STAI (form Y). Palo Alto: Consulting Psychologist Press Inc.

Stuart, G. W., & Sundeen, S. J. (1983). Principles and practice of psychiatric nursing (2nd ed). St. Louis: C. V. Mosby.

Templer, D., I. (1971). The relationship between verbalized and nonverbalized death anxiety. Journal of Genetic Psychology. 119, 211-214.

Templer, D., I. (1970). The construction and validation of a death anxiety scale. The Journal of General Psychology, 82, 165-177.

Templer, D. T., & Ruff, C. F. (1971) Death anxiety scales means, standard deviations and embedding. Psychological Reports, 29, 74-175.

Whelan, W. M., & Warren, W. M. (1980). A death awareness workshop. Theory, application and results. Omega, 11(1), 61-71.

White, P. D., Gilner, F. H., Handal, P. J., & Napoli, J. G. (1983). A behavioral intervention for death anxiety in nurses. Omega, 14(1), 33-42.

Yalom, I. D. (1980). Existential Psychotherapy. New York: Basic Books.

Vita

John Luther Weeks

Birthdate: November 23, 1933

Birthplace: Ozark, Alabama

Education:

1985-1987 The College of William and Mary
Williamsburg, Virginia
Educational Specialist

1983-1985 Virginia Commonwealth University
Richmond, Virginia
Master of Science

1951-1957 Samford University
Birmingham, Alabama
Bachelor of Science